The IRON AGE

November 20, 1958

A Chilton Publication

The National Metalworking Weekly



"Feed Ahead":
New Idea in Machine
Control P. 95

What's Behind The Employment Lag? - P. 55

Put Movies to Work
On Plant Problems – P. 60

Digest of the Week - P. 2-3

ARISTOLOY

Electric Furnace Steels



NEW PRODUCTS & FACILITIES CATALOG Describes melting, rolling, thermal treating and finishing capacity of Copperweld's Aristoloy Steel Division. Complete product listing for Aristoloy carbon, alloy, stainless, leaded and nitriding steels. Send for your copy today. BEARING QUALITY · AIRCRAFT · PISTON
PIN QUALITY · ELECTRIC FURNACE ALLOY ·
ELECTRIC FURNACE CARBON · ALLOY
BASE ALLOY · QUALITY CARBON

LEADED—Electric Furnace 52100 • Electric Furnace Alloy • Electric Furnace Carbon • Alloy Base Alloy • Quality Carbon.

STAINLESS - 300 Series • 400 Series • 500 Series.

FURNISHED AS—Hot Rolled Blooms, Billets & Bars • Hot Rolled, Annealed & Heat Treated • Ground Blooms & Billets • Bars—Hot Rolled; Turned; Turned, Ground & Polished; or Cold Drawn with or without Heat Treatment.

COPPERWELD STEEL COMPANY





Welding Steel Plates for Pump Beds

The two pump beds, shown here being welded back to back, are nearly 31 ft long and weigh 20,300 lb each. Bethlehem plate was used by H. F. Butler, Inc., weldment fabricators of Union, N. J., in constructing the beds. Both the outside frames and the interior "eggcrate" bracing were made from % in. plate. This type of fabrication calls for steel plates of uniform quality. And that's something you

can count on when you specify Bethlehem. Bethlehem plates, together with good welding technique, give assurance of sound welds. Bethlehem plates come in a full range of sheared and universal mill sizes.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation
Expert Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STE



THE IRON AGE Chestnut and 56th Sts. Philadelphia 39, Pa., SH 8-2000

GEORGE T. HOOK, Publisher

EDITORIAL STAFF
TOM C. CAMPBELL, Editor-in-Chief

GEORGE F. SULLIVAN, Editor
Managing Editor
News-Markets Editor
Special Features
Machinery Editor
Materials Editor
Mr. Expennyl.
AL Expennyl.
AL Expennyl.
AL Expennyl.
AL Expennyl.
Assistant Editor: J. A. Moore. Regional
Editors: K. W. Bennett, Chicago;
T. M. Rohan, Cleveland; H. R. Neal,
Detroit; G. G. Carr, New York; R.
Kay, Los Angeles; G. J. McManus,
Pittsburgh; G. H. Baker, R. M. Stroupe,
N. R. Regelmbol, Washington. Correspondents: F. L. Allen, Birmingham; N.
Levenson, Boston; R. M. Edmonds, St.
Louis; J. Miller, Sen Francisco; R.
Kasarian, Buffalo; D. R. Coughlin,
Seattle; A. T. Collins, Houston; F.
Sanderson, Toronto; F. H. Harley, London, Mathrid Board:
Paul Wooton, Washington representative.
WASHINGTON EDITORIAL OFFICE

WASHINGTON EDITORIAL OFFICE Washington 4.... National Press Bldg. Robert Gunning— Readability Consultant

Readoulity Consultain
BUSINESS STAFF
Warren Owens
Director of Research
Director Director
Circulation Mgr.
Promotion Manager
Asst. Research Dir.
REGIONAL BUSINESS MANAGERS
Denotes editorial office also

Atlanta 9

100 E. 42nd St.

Philadelphia 39—
B. L. Herman, J. A. Crites, W. E. Carr
Chestnut & Séth Sts.
Sherwood 8-2000
Pitisburgh 22.
T. M. Fallon
S02 Park Bldg.
Atlantic 1-1830
San Francisco 3.
Don May
1355 Market St.
UNderhill 1-9737
W. Hartford 7. Paul Bachman, R. Goss
62 LoSalle Rd.
Adams 2-0486
England
Harry Becker
15 Grafton St., Altrincham, Cheshire

A Chilton Publication
CHILTON OFFICERS & DIRECTORS
Joseph S. Hildreth, Ch. of the Board

Joseph S. Hildreth, Ch. of the Board
G. C. Buzby, President
Vice-Presidents: P. M. Fahrendorf, L. V.
Rowlands, G. T. Hook, R. E. McKenna;
Treasurer, W. H. Vallar; Secretary,
John Blair Moffett; Directors: M. E.
Cox, F. P. Tighe, E. B. Terhune, Jr.,
R. W. Case, Jr., J. C. Hildreth, Jr.—
Comptroller, Stanley Appleby.
Indexed in Applied Science & Technology Index and Engineering Index.



Copyright 1958 by Chilton Company
THE IBON AGE, published every Thursday
YCHLZYON COMPANY, Chestout 4:56th
Postage paid at Philadelphia, Fa.
Dostage paid at Philadelphia, Fa.
Dostage paid at Philadelphia, Fa.
The Company
Ferritary of the Child Child
Ferritary of the Child Child
Ferritary of the Ch

The IRON AGE

November 20, 1958-Vol. 182, No. 21

Digest of the Week in

Who Is Brainwashing? We're Doing It Ourselves NEWS OF INDUSTRY *Special Report: Record Business Needed to Regain Full Employment *Missouri Ore Development Gains 58 Automatic Coding Can Cut Costs 59 *Plants Star in More Movies. 60 *Shortcuts Reduce Drafting Costs 61 *Scrap Men Fret Over Hot Metal.... 62 *Building Peak Coming 63 *Will Oil Country Goods Tighten? 64 The IRON AGE Salutes 69 Men in Metalworking 85 FEATURE ARTICLES *Automation Adds a Brain Cell *Transducer Doubles Ultrasonic 98 Efficiency *Band Saw Ends Production Snag 100 *Heat Treated Ductile Iron 102 **Dual Preheat Aids Punching** 105 *Collector Handles Mill Scale

*Step Cutter Mills Tough Jobs 106 108 Fast Heat Cycle Toughens Pinions 110 NEWS ANALYSIS Newsfront Report to Management 71 73 Automotive 77 *Washington 79 West Coast Machine Tool MARKETS & PRICES *The IRON AGE Summary 135 *Purchasing 136 Steel Product Markets 138 Index to Prices 139 Iron and Steel Scrap Markets 140

Nonferrous Markets 142

Clearing House 152

New Equipment 124

INDEX TO ADVERTISERS 158

REGULAR DEPARTMENTS

*Starred items are digested at right.

EDITORIAL

NEWS ARTICLES

EMPLOYMENT TRENDS

Growing Concern — Apparent failure of employment to rebound with production raises new problems. Many authorities believe the economy will have to surpass the 1956 level to return to full employment. it could mean a new trend in labor demands.

P. 55

MISSOURI IRON ORE

Under Development—Bethlehem Steel and St. Joseph Lead are



pushing new iron ore project at Pea Ridge, near St. Louis. Ore may go to Bethlehem at Johnstown, Pa. or into the Chicago district. P. 58

MOVIES AT WORK

A New Shop Tool—You'll find movie cameras grinding away in industry to help solve knotty problems for management. At least 6000 plants have one or more cameras at work.

P. 60

DRAFTING SHORTCUTS

Time Saving Tips - Increasing

Metalworking



WEIGHS, THEN ACTS: With machine guards removed to expose operation, Ralph McNitt (left), motor plant supervisor, and A. D. Mitchell, production engineer, Oldsmobile Div., GM, examine setup. This week's technical feature tells how weigh-miller first gages a part, then sets up controls for precise machining.

P. 95

drafting output while holding costs in line is a challenge. But recent forum had some advice on cutting costs and saving time. P. 61

NATIONAL SALES TAX

Ike Wants It—Everyone agrees something must be done to improve Federal tax collections. But Ike's sales tax plan is openly opposed by both parties in Congress. P. 77

FEATURE ARTICLES

ULTRASONIC TRANSDUCER

With Double Efficiency—A new magnetostrictive transducer boosts ultrasonic efficiency by 100 pct or more. The unit differs from the conventional type in that the laminations are spaced. Each lamination is separately attached to the plate. The added sound intensity will bring many more ultrasonic applications.

P. 98

BAND SAWS CUT BLANKS

To End Production Snag—Installing of band saws to prepare forging blanks has eliminated lost time at forging hammers because of lack of blanks. Scrap losses, blade costs, and maintenance are all reduced.

P. 100

HEAT TREAT DUCTILE IRON

For Wide Property Range—Heat treatment transforms ductile iron into a host of types that fill special needs at low cost. Chief among its attributes is that ductile iron is an elastic material. Six types provide various combinations of strength, ductility and toughness. P. 102

MILL SCALE COLLECTOR

On Continuous Basis—A scale collecting system has enough excess capacity to overcome accumulation in the pit while scale removal conveyor is out for repairs. System records operating tonnages of between 12-15 tons an hour.

P. 106

STEP-MILLING CUTTER

For Tough Jobs — Progressive bites with sets of throwaway carbide lets a milling tool cut faster, smoother and at less cost. The new cutter can do a job in one 15-minute pass for \$2.65. P. 108

MARKETS & PRICES

HOT METAL THREAT

Scrap Men Worried—For nearly two years, steel mills have been using more pig iron than scrap. Percentagewise the amount is small, but the trend has long-term implications.

P. 62

BUILDING RECORD

Coming in 1959—New records will be set by the construction industry, F. W. Dodge Corp. forecasts. Contracts awarded and work put in place should hit all-time high.

P. 63

OIL COUNTRY GOODS

Supply Pinch Due?—Right now casing and tubing buyers can get fast delivery from mill stocks. But expected increase in oil drilling next year may lead to serious supply problem for oil country goods. P. 64

MILLS COMPETE

Tough Battle for Orders—Steel mills are fighting tooth-and-nail for business. Some are absorbing extra freight charges to land orders in distant markets.

P. 135

CONVEYOR DESIGN TRENDS

Build for Continuous Flow — Conveyor makers are turning out new systems that provide faster, better handling of materials. There's more emphasis on units providing continuous flow.

P. 136

NEXT WEEK

APPROPRIATIONS SURVEY

For Metalworking—A new and unique quarterly report will be inaugurated by The IRON AGE next week. It will disclose the amount of funds actually appropriated each quarter in 40 major segments of metalworking. The survey will be an important tool in

pinpointing trends in specific industries. It will also help management to (1) gage the course of the overall economy in coming months, (2) compare its capital expansion plans with that of its own industry and manufacturing in general, and (3) have a new marketing tool to determine which industries are the best prospects for its products.

54" HOT STRIP MILL



featuring DIRECT DRIVE to ALL SIX STANDS

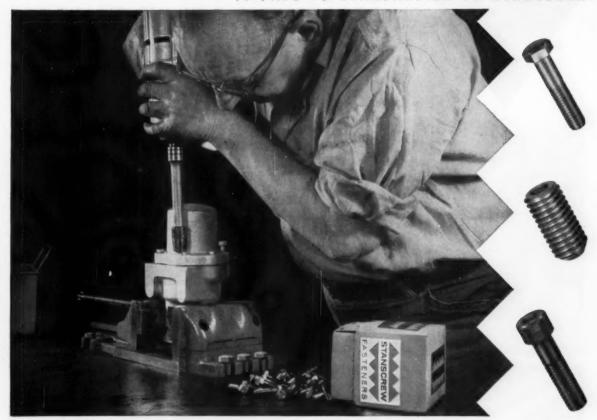
For the first time anywhere a 54" hot strip mill with direct drive to all mill stands has been built at the Portsmouth plant of Detroit Steel Corporation. This design eliminates the conventional large gear drive which is expensive to install, costly to maintain, less efficient in operation, and requires more space. Pittsburgh Engineering and Machine Division designed, fabricated and erected this entire mill with its many outstanding features.

We invite your inquiries for all types of rolling mills and auxiliary equipment.

"Electric and open hearth steel castings from 1 lb. to 100 tons"



Division of Pittsburgh Steel Foundry Corporation
P. O. BOX 986, PITTSBURGH 30, PENNSYLVANIA
PLANT AT GLASSPORT, PENNSYLVANIA



Stanscrew service cuts rejects, speeds assembly for valve manufacturer

A prominent manufacturer of 4-way valves for freon was having trouble on his assembly line. His fasteners, tightened to an extreme degree to prevent seepage of the gas, were breaking on too many occasions. This meant complications in assembly and a high reject rate-which increased production costs substantially.

One of Stanscrew's fastener specialists, called in by a Stanscrew distributor, quickly found the answer. He recommended a standard cap screw and had staff engineers work out the precise torque which should be applied to insure a complete seal at all gaskets, yet eliminate any possibility of fastener breakage. By following these recommendations, the manufacturer has eliminated the problem of fastener breakage. and substantially reduced his reject rate.

Stanscrew offers over 4,000 standard fasteners . . . including a complete selection of socket, set, and cap screws. All are produced under rigid quality control methods and incorporate the lessons learned during 85 years of fastener manufacture. All 4,000 are always in stock and quickly available.

For the answer to your fastener problem, call your Stanscrew distributor. He will have a Stanscrew fastener specialist promptly study your operation and make specific recommendations.



HARTFORD MACHINE SCREW COMPANY, HARTFORD, CONNECTICUT.

WESTERN | THE WESTERN AUTOMATIC MACHINE SCREW COMPANY, ELYRIA, OHIO

STANDARD SCREW COMPANY 2701 Washington Boulevard, Bellwood, Illinois

New steels are born at Armco

GET QUICK DELIVERY, FROM FULL STOCKS OF STAINLESS Call Your Armco Distributor





You can rely on the Steel Service Center of your nearest distributor of Armco Stainless Steels. Write us if you don't know his name. Armco Steel Corporation, 2468 Curtis Street, Middletown, Ohio.

ARMCO STEEL



Armco Division • Sheffield Division • The National Supply Company • Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Union Wire Rope Corporation • Southwest Steel Products

Who Is Brainwashing? We're Doing It Ourselves

We are being told that we are in a new era; that old-fashioned ideas come from guilt complexes. The new thought is that wealth for all and no more hard work are the keys to future living. Those who believe otherwise are old fogies who are against progress and new ideas. The story usually runs about as follows:

"What you people don't see is that the world is moving on. No longer are the old concepts of thrift and hard work the ones that count today. We are living in a new era that spells more leisure, less work, and greater wealth for all of us."

This is bilge. Time will show it to be just that. Hard work and thrift are still important. When they no longer are, then we certainly will be in a new era—and it won't be one we like.

We carp about brainwashing. We have brainwashed ourselves to believe what we want to believe. We have set up the false notion that government can help us without realizing that self help comes first.

We put a premium on mediocrity by lashing out at intelligence, merit, and beliefs. Togetherness is to become the great leveler where each person is as wise and worthy as the next; no matter what equipment or character the "next" has. If one disagrees with this he is snobbish.

We pay farmers not to grow things. We wonder why they are restless when it is suggested that farm surpluses will drown us in their yearly waves of plenty.

We play the city person against the farmer by having the city person pay the hidden costs of "supports," storage, and bureaucracy. We sell security on the basis that everyone will be happy at the expense of the working stiffs who pay the excess bill.

We preach that machines and techniques will pay our way. Then we allow politicians to throw roadblocks in front of an enlightened business attitude

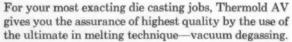
We promise everyone a home with a lifetime to pay for it. Whether anyone merits it or not, the state decrees that it shall be so. We set quotas for human behavior.

We free co-ops from taxes so they can compete with the very ones who pay the taxes. We call profits a dirty word and make the businessman defend what democracy thrives on.

Who is brainwashing who?

Tom Campkeee Editor-in-Chief

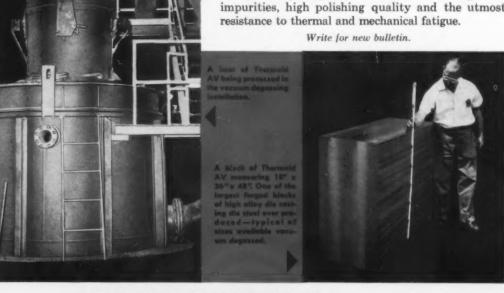
with VACUUM DEGASSING in die casting die steels HERMOLD AV



Now large size ingots are vacuum degassed in standard production processing—the first tool steel degassing installation in the United States.

This new advantage is in addition to quality controls that have set the standard for the industry-small batch furnace melting, close control of press forging and annealing, and 100% Reflectoscope testing.

With this contribution to the high quality of Thermold AV, Universal-Cyclops gives further assurance of homogeneity of structure, freedom from gaseous impurities, high polishing quality and the utmost resistance to thermal and mechanical fatigue.



CORPORATION BRIDGEVILLE, PA.

TOOL STEELS . STAINLESS STEELS . HIGH TEMPERATURE METALS

FOR YOUR NEXT CRITICAL DIE CASTING JOB, GET IN TOUCH WITH YOUR NEAREST UNIVERSAL-CYCLOPS SALES OFFICE OR WAREHOUSE.

indianapolis Los Angeles

Pittsburgh

Syracuse

Workman's Pride

Sir—I have read your latest editorial, "Pride of Workmanship—What Has Happened to it?", with much interest. In fact, I have found all of your editorials very stimulating. I frequently route the copies I receive to our management people to make sure that they do not miss them.—G. B. Varner, Adv. Mgr., Kennametal Inc., Latrobe, Pa.

Ceramic Coatings

Sir—This is in reference to your article, "Uses Grow for Ceramic Coatings," by F. D. Shaw, in the Sept. 25 issue.

The dielectric strength of ceramics with the higher glass content usually increases, while their thermal shock resistance decreases. The addition of lead (I assume he means lead oxide) which is included in the glass phase of the ceramic coating helps these insulating valves but only at low temperatures.

This glass has a negative coefficient of resitivity and fast, resulting in poor electric and heat insulation



"Never mind the requisition just get more potato salad."

at higher temperatures. The addition of lead has another undesirable reaction—its attack on other metals at high temperatures.

At higher temperatures lead oxide is very unstable, as it is a many valance oxide. Some existing free lead may go into solution with the metallic undercoating.—J. Sheheen, R. F. D. 3, Ithaca, N. Y.

Spark Test Data

Sir—We are presently outfitting a metallurgical laboratory, and need a wall chart in color describing and illustrating the identification of steels by sparks. I believe that the reference given in the 1948 ASM Metals Handbook is what I have in mind: "Spark Testing", Sept. 26 and Oct. 3, 1935 issues and Oct. 19, 1939 and April 16, 1942 issues of IRON AGE.

Will you please advise whether you can furnish copies of these articles and a chart in color.— Walter Baggaley, Prof. of Mechanical Engineering, American Univ. of Beirut, Beirut, Lebanon.

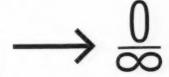
 Perhaps a reader can help. We have no reprints.—Ed.

Epoxy Resin

Sir—On page 35 of your Oct. 9 issue you have an article which mentions epoxy resin as being used to replace some types of wood. Would you please inform us where we can obtain the name of the firm working on preparing planks made of epoxy resin.—A. G. Buckely, Mgr., Construction Engineering, Goodyear Tire & Rubber Co., Akron, Ohio.

• For more data get in touch with Mr. H. E. Renaud, President, Ren Plastics, Lansing, Michigan.—Ed.

IT'S NOT "HOW THIN"



BUT HOW EXACT!

With the recent trend in strip metal towards thinner and thinner gauges, Somers, a pioneer in thin strip for nearly 50 years, is naturally among the leaders in rolling ultra-thin strip. But in addition to rolling production quantities of strip as thin as can be obtained anywhere in the world, Somers utilizes exclusive techniques and equipment to make sure that every foot of metal is up to the most exacting standards.



 Accu-Ray nuclear gauging to assure absolute uniformity of thickness throughout.



2. Unique rolling mill for strip from .001" down, makes possible extremely close control of the final preanneal temper, and uniform accuracy of the final temper.



3. Experience exclusively with thin strip metals gives Somers on unmatched background in engineering ultra-thin strip to meet all special requirements.



Somers Brass Company, Inc.
102 BALDWIN AVE., WATERBURY, CONN.



YOU KNOW US FOR ...

CONTINUOUS BUTT WELD PIPE MILLS · SEAMLESS PIPE & TUBE MILLS

ELECTROLYTIC TINNING LINES · CONTINUOUS GALVANIZING LINES

SHEAR & TRIM LINES · DRAWBENCHES · ROLLS · SHEET CLASSIFIERS

BUT DO YOU KNOW US FOR ALL THESE?

Tube Expanders

Billet Peelers

Straighteners

Uncoiler-Levellers

Beveling & End Facing Machines

Levellers (2 and 4 High)

Rectifier Levellers

Heavy Plate Levellers

Stretcher Levellers

Coil Boxes

Reels (Pay-Off and Tension)

Upcoilers

Pilers

Scrap Ballers

Scrubbing and Drying Lines

Continuous Strip Picklers

Oiling Machines

Mill Tables

Cooling Beds

Multi-Strand Tube Cold Rolling Mill Cracker Shears

Push Pointers

Tilting Head Presses

Extruders

Plastic Pipe Equipment

Continuous Automatic Mills for Rubber & Plastics

Continuous Pipe Galvanizing
Equipment

Bull Blocks

AETNA · STANDARD

THE AETNA-STANDARD ENGINEERING COMPANY

GENERAL OFFICES: PITTSBURGH, PA.

PLANTS: ELLWOOD CITY, PA., WARREN, OHIO

CONTINUOUS GALVANIZING LINES . CONTINUOUS ANNEALING LINES . CONTINUOUS ELECTROLYTIC TINNING LINES . SIDE TRIMMING AND SHEAR LINES AND OTHER FINISHING EQUIPMENT . CONTINUOUS BUTTWELD PIPE MILLS . SEAMLESS TUBE MILLS . DRAWBENCHES AND OTHER COLD DRAW EQUIPMENT . ROLLS AND CASTINGS . EXTRUDERS, MILL PRESSES FOR RUBBER, PLASTIC AND CHEMICAL

He Went Thataway

It's been a long time since we heard any jokes about the Pentagon—like the officer who went in a second lieutenant and was a major before he found his way out. But we received a shocker the other day that revived our respect for the wide range of U. S. defense activities.

One of our editors placed a routine call to an Air Force major to check on a new regulation. He had interviewed the officer on previous trips to the Pentagon, but hadn't talked to him for several weeks.

The Pentagon switchboard operator searched for his listing in vain. "Shall I give you Officer Locator?" she finally asked.

Aware that some 29,000 people work at the Pentagon, our editor was only somewhat surprised, conceded that an Officer Locator might be worthwhile.

But again the search was in vain.

"We haven't got any listing on him," the Pentagon tracer reported. "Shall I transfer you to World Wide Locator?"

Statistics show the Pentagon has 7600 windows, 3000 clocks, 550 water fountains, 1900 toilets in 240 rest rooms and serves 33,000 cups of coffee in two restaurants, six cafeterias, nine beverage bars, and an outside snack bar.

Maybe they do need Officer Locators after all.

Midget Markets

From time to time we pay tribute to the small but vital uses of metals; markets never large, but still important.

Here are some of them:

Hospitals are using nickel to help clean surgical instruments without tedious hand scrubbing. They bombard the instruments with high frequency vibrations produced by magnetostriction.

Grade "A" nickel, which has high magnetostrictive properties, contracts and returns to normal size in an alternating magnetic field. At high frequencies these rapid changes set up vibrations which form millions of tiny bubbles in a liquid. These cleansing bubbles scour out even the most remote crevices.

Then there's the Caddy Cane for golfers. Made by the Modern Manufacturing Co., Worcester, Mass., it's aluminum and weighs only one-eighth as much as the average golf bag. It can be easily carried in an outstretched arm without dragging on the ground. In addition, the Caddy Cane has a spike at the bottom which, when pressed into the ground, holds it upright without other support.

And finally there's the boon which will end the tears of German housefraus — tears brought on by peeling onions. It's a collapsible aluminum tube in which a German firm markets onion paste ready for use.



"Anybody besides Fedderman want to put in for a different territory?"

WARD STEEL co.

PROMPT WAREHOUSE SERVICE ONLY Most Complete Stock in

BLUE TEMPERED SPRING STEEL

America of

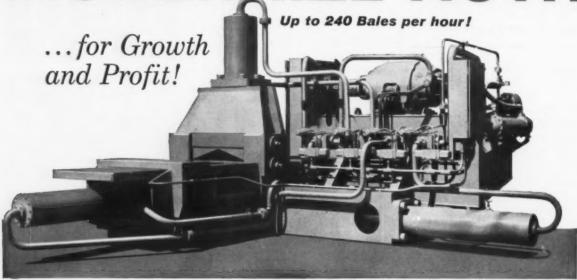
We believe that the way to sell is to carry a stock which permits satisfying any reasonable warehouse demand

B7B Rindge Ave. Ext. Phone UN 4-2460 CAMBRIDGE 40, MASS.

Branch 3042-3058 W. 51st Street, CHICAGO, ILL Phone: Grovehill 6-2600



MODERNIZE NOW!

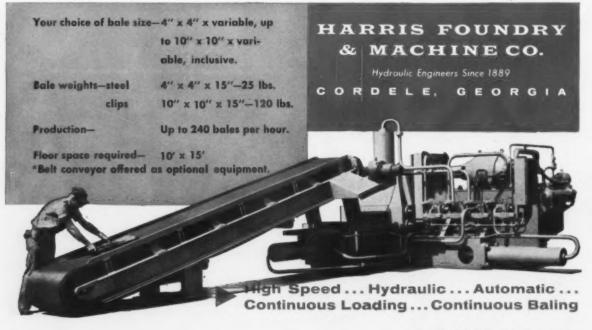


The HARRIS TG-50 Series for high-speed production of small bales

These fully automatic 3-compression Harris presses are suitable for baling both ferrous and non-ferrous metals. They are especially designed to handle sheet clippings, stamping skeletons, wire and cans.

No special foundation is required for these small, compact presses and they may be moved from one location to another. The whole operation is by pushbutton. All necessary starters, control panel, and pushbutton panel are included.

Talk with a Man from Harris



COMING EXHIBITS

Power & Mechanical Engineering Show—Dec. 1-5, New York Coliseum. (International Exposition Co., 480 Lexington Ave., New York 17.)

International Heating & Air-Conditioning Show—Jan. 26-29, Convention Hall, Philadelphia. (International Exposition Co., 480 Lexington Ave., New York 17.)

Western Metal Show — March 16-20, Pan-Pacific Auditorium and Ambassador Hotel, Los Angeles. (American Society for Metals, 7301 Euclid Ave., Cleveland 3.)

Corrosion Show — March 16-20, Chicago. (National Assn. of Corrosion Engineers, 1061 M & M Bldg., Houston 2, Texas.)

Industrial Finishing Show — June 15-19, Detroit Artillery Armory, Detroit. (Information: H. J. Mc-Aleer, 3171 Bellevue, Detroit 7, Mich.)

MEETINGS

NOVEMBER

Manufacturing Chemists' Association, Inc. — Semi-annual meeting and winter conference, Nov. 25, Hotel Statler, New York. Society headquarters, 1625 Eye St., N. W., Washington 6, D. C.

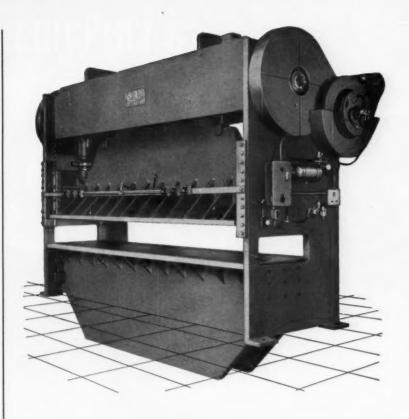
Automotive Tool & Die Manufacturers Assn. — Annual meeting, Nov. 26, Fort Shelby Hotel, Detroit. Society headquarters, 103 Pallister Ave., Detroit.

American Society of Mechanical Engineers — Annual meeting, Nov. 30-Dec. 5, Statler & Sheraton-McAlpin Hotels, New York, Society headquarters, 29 W. 39th St., New York.

DECEMBER

Electric Overhead Crane Institute
—Annual meeting, Dec. 2, Statler
Hotel, Washington, D. C. Society
headquarters, One Thomas Circle,
Washington 5, D. C.

(Continued on P. 16)





PRESSES STRAIGHT-SIDE TYPE

large die area capacities up to 400 tons

This is a typical model of CHICAGO straight-sidetype presses used for multiple punching, notching, and trimming operations. This press with a die area of 48 inches by 198 inches has a capacity of 200 tons.

Complete recommendations for any job on request.

8674



Press Brakes • Straight-Side-Type Presses • Press Brake Dies

Hand and Power Bending Brakes . Special Metal-Forming Machines

DREIS & KRUMP

MANUFACTURING CO.

7430 South Loomis Boulevard, Chicago 36, Illinois

integrated CRUCIBLE steel service



Average Crucible warehouse stocks these and many other specialty steel items in a tremendous range of

sizes and analyses. A single phone call will bring any or all of them to you in the quantity you need.

keeps 16,000 specialty steel items flowing from mills to local warehouses for immediate delivery to you

Every day, thousands of specialty steel items flow from Crucible mills to Crucible's 27 strategically located warehouses - keeping local stocks at levels that meet customers' maximum needs.

Here's how these continually-replenished stocks are helping one steel buyer today. He says:

"We reduced plant inventory to cut operating costs and free working capital and space. This is smart business. But it creates problems, too-like when production requisitions an extra-large order of 36" x 120" Type 304 stainless sheet, 20 ga and 2B finish - and needs it overnight. I solve this problem by calling the Crucible warehouse. It's set up to give us the kinds of steels we need from stock."

All 27 Crucible warehouses offer instock delivery of approximately 16,000 specialty steel items, ranging from tool steels to stainless sheet and wire. They're able to maintain these high inventories because they're part of Crucible's completely integrated operation, from mining the ore to steelmaking to warehouse delivery to you. If you'd like to know all the ways these warehouses can serve you, phone or visit the one near you today. Crucible Steel Company of America, Dept. PK06, The Oliver Building, Mellon Square, Pittsburgh 22, Pa.

STOCK LIST

Keeps you up-to-date on local stocks of specialty steels. Just ask the Crucible salesman to place your name on the regular mailing list.

One Source For All



Inventory specialists keep warehouse stock Steels you ordered yesterday arrive today records up-to-date to give you fast, accurate at your receiving platform - dependably answers on availability of every analysis.



on schedule.



Warehouses maintain modern equipment, like this electronically-controlled flame cutter, for fast processing of specialty items.

TOOL STEELS-Water, oil, air hardening, shock resisting, hot work, plastic and die casting steels in all forms, including bars, sheets, plates, drill rod, hollow bars, forgings and flat ground stocks

HIGH SPEED STEELS-Crucible's famous "Rex"® steels: Rex Thrift Finish rounds, hot rolled and cold drawn flats and squares, drill rod, forgings, sheets, plates, and tool bits

STAINLESS STEELS - Bars, sheet, strip, wire, cold heading wire, metalizing wire, plates, angles

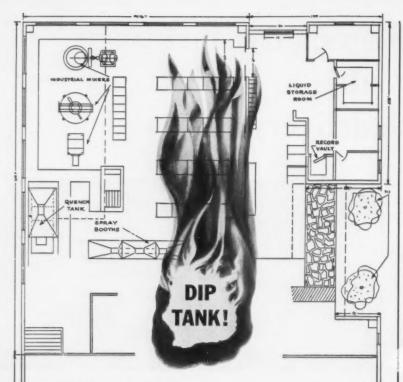
FREE MACHINING STEELS - Crucible Max-el® rounds, hexagons, plates and brake die steel ALLOY STEELS - Bars, billets, strip and sheet COLD ROLLED CARBON SPRING STEELS DRILL STEELS - Hollow and solid drill steels ALUMINUM EXTRUSION DIE STEELS HOLLOW TOOL STEEL WELDING AND HARD FACING ROD PLASTIC MOLD STEELS

- and many others

PERMANENT MAGNETS

CRUCIBLE STEEL COMPANY OF AMERICA

Branch Offices and Warehouses: Atlanta • Baltimore • Boston • Buffalo • Charlotte • Chicago • Cincinnati • Cleveland • Columbus • Dallas • Dayton Denver • Detroit • Grand Rapids • Harrison • Houston • Indianapolis • Kansas City • Los Angeles • Milwaukee • New Haven • New York Philadelphia • Pittaburgh • Portland, Ore. • Providence • Rockford • Salt Lake City • San Francisco • Seattle • Springfield, Mass. • St. Louis St. Paul • Syracuse • Tampa • Toledo • Toronto, Ont.



HOT SPOT in your plant?

Guard dip tanks, spray booths, record vaults against the danger of fire! Guard them 24 hours a day with a Kidde fully-automatic carbon dioxide fire extinguishing system. Finest fire protection on the market today, Kidde systems give you these outstanding features that come from more than thirty years' experience!

All operating parts completely enclosed to guard against fouling or accidental operation.

No clumsy triggering methods or falling weights.

Self-contained; no outside power needed.

Visual indicators to show if system has been operated,

Easy testing of all operating parts.

No parts to replace after operation or test.

Fast-acting, clean carbon dioxide does the job that no other extinguishing agent can do: snuffs fire out in seconds, then vanishes into thin air. Won't harm valuable machinery, leaves no mess to clean up. For detailed information see Sweet's Plant Engineering Catalogue or write Kidde today.



Walter Kidde & Company of Canada Ltd., Montreal — Toronto — Vancouver

EXHIBITS, MEETINGS

(Continued from P. 13)

Spring Manufacturers Assn.—Annual meeting, Dec. 2-3, Barbizon-Plaza Hotel, New York. Society headquarters, Box 1440, Bristol, Conn.

The Metallurgical Society of AIME —16th electric furnace steel conference, Dec. 3-5, Hotel Statler, Detroit. Society headquarters, 29 W. 39th St., New York.

American Institute of Chemical Engineers—Annual meeting, Dec. 7-10, Netherland Hilton Hotel, Cincinnati. Society headquarters, 25 W. 45th St., New York.

The Material Handling Institute, Inc.—Annual membership meeting, Dec. 10, Hotel Roosevelt, New York. Society headquarters, One Gateway Center, Pittsburgh.

JANUARY

Aluminum Window Mfrs. Assn.—Winter meeting, Jan. 7-8, Key Biscayne Hotel, Miami, Fla. Society headquarters, 75 West St., New York 6.

Society of Automotive Engineers— Annual meeting and engineering display, Jan. 12-16, Sheraton-Cadillac and Hotel Statler, Detroit. Society headquarters, 485 Lexington Ave., New York 17.

Industrial Heating E quipment Assn., Inc.—Annual winter meeting, Jan. 19-20, Cleveland. Society headquarters, 1145 19th St., N. W., Washington 6, D. C.

Steel Shipping Container Institute, Inc.—Winter meeting, Jan. 20-21, St. Regis Hotel, New York. Society headquarters, 600 Fifth Ave., New York 20.

The American Boiler Mfrs. Assn.
—Mid-winter meeting, Jan. 22,
Statler Hotel, Cleveland. Society
headquarters, 4062 Mayfield Rd.,
Cleveland 21.

The Magic of Joe Magarac . . . Crankshaft for a 16 Cylinder Diesel A Promision

Joe grabs a white hot bar from the heating tunnel . . . his magic converts a 3000 ton Forging Press to 10,500 ton. The 4 way squeeze forges a Diesel Engine crankshaft section. Just like that! Throws are forged to the correct angles in one operation.

Above you are looking at 4 crankshaft sections going through heating tunnels, then taking their turn in the "big squeeze." They will wind up in the heart of a 16 cylinder Diesel Engine to power a

railroad locomotive, a ship at sea, a city's heat and light, a monster machine of industry.

Your steel forging and casting components are made to specification from raw materials to finished product here. Skilled metallurgists, engineers and craftsmen keep an eagle eye on every operation . . . your assurance of the highest quality steels. Consult with us.

ERIE FORGE & STEEL CORPORATION

ERIE, PENNSYLVANIA

MEMBER AMERICAN IRON AND STEEL INSTITUTE



the man who needs

a new machine tool is



This tape-controlled table eliminates set-up time on small lots

It's natural enough, in a way, to associate "automation" with huge plants and their long, high-speed production lines.

We should also keep in mind, however, that certain "automation" techniques offer tremendous benefits to the small job shop. Jones & Lamson research and development have produced remarkable results in applying "automation" to small-lot production.

Are you interested in drastically cutting setup and change-over time, and greatly increasing your small-lot flexibility? We'd be pleased to show you how the results of our intensive research and development programs can be put to good use in your operations.

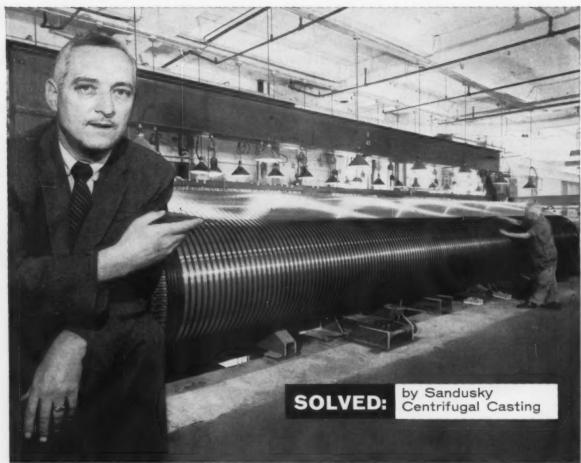
Write for literature. Jones & Lamson MACHINE COMPANY, 511 Clinton Street, Springfield, Vermont.

Unusual fasteners are everyday occurrences at Lamson. Some are fairly common; some are not even in existence when we get the order. But we produce each one with the same highly-developed engineering and manufacturing methods that keep costs low and quality at its optimum in Lamson's standard fastener products. Conversely, these same standards benefit from the skill and ingenuity derived in producing special items. These are reasons why you should look to Lamson for leadership in fasteners.

The Lamson & Sessions Co.

5000 Tiedeman Road, Cleveland 9, Ohio . Plants at Cleveland and Kent, Ohio . Chicago . Birmingham





Eastwood-Nealley's chief engineer points out great size of grooved cylinder

Who else could cast this 22-ton cylinder for the world's biggest wire cloth loom?

To weave Fourdrinier wires up to 352" wide for the world's newest and largest paper machines, Eastwood-Nealley Corp., Belleville, New Jersey, required a cylinder over 30 feet long.

Sandusky supplied this 44,685 lb. roll, centrifugally cast of SAE-1030 steel and rough machined to 363" in length, 40%" on the O.D., to be used as the backbeam on Eastwood's new wire cloth loom. Since the cylinder had to be machined with 176 extremely smooth 2" x 2" stirs (grooves) in which wire is wound, it had to be of flawless quality. Otherwise any voids or inclusions exposed by machining would nick the delicate bronze strands and cause the expensive wire cloth to fail. Eastwood-Nealley's chief engineer, Clemson A.

Bower, asserts: "We chose a Sandusky Centrifugal Casting because only Sandusky could make such a gigantic cylinder without welding. We were confident that our special machining operation would be accomplished without costly re-makes, for in the 12 years we have been using them, we never found a single flaw in a Sandusky Centrifugal Casting!"

When cylinders or piping are needed in your design, keep Sandusky Centrifugal Castings in mind. We can supply cylindrical products from 7" to 54" O.D. and up to 33 feet long—made from a variety of alloys including stainless, carbon and low-alloy steels as well as copper- and nickel-base alloys. Send for free booklet, "Your Solution to Cylindrical Problems."



Because of what this unique DEVELOPMENT PRESS tells us...

Elmes Presses are built in standard and special designs for metal drawing and forming, bending, straightening, forcing, powdered metal compacting, hobbing, etc.



 for coining and truing wheel rims and similar items. Built in a wide range of sizes and capacities.

DOUBLE-ACTION DRAWING AND FORMING PRESS with 300-ton main slide and 100-ton blankholder slide. (Total tonnage is available for single action.) Single and Triple-Action types also available.





SPECIAL 600-TON
C-FRAME PRESS
— an adaptation of
a standard C-Frame
design. Combines two
300-ton presses in
one. The unit can be
operated with both
cylinders in unison, or
as individual presses.



The ingenious try-out press shown above is an exclusive creation of Elmes engineering. Center of activity in the Elmes Research Department, this versatile unit, with four rams, can be set up on almost any operation that a hydraulic press is normally called upon to perform.

Thus, a customer's out-of-the-ordinary metal pressing work can be tried out, and specifications for a production press of maximum efficiency accurately determined—not just on paper, but after having been performance-proved under actual working conditions.

Research with this press also permits the engineering of greater unusual-job adaptability into standard Elmes® Presses. As a result, where a standard Elmes Press does not fully meet a customer's requirements, it can be readily, efficiently, and economically modified in design.

Send us your pressing problem—you'll find that Elmes facilities can save time and money on your development work. See your Elmes Distributor, or write direct.



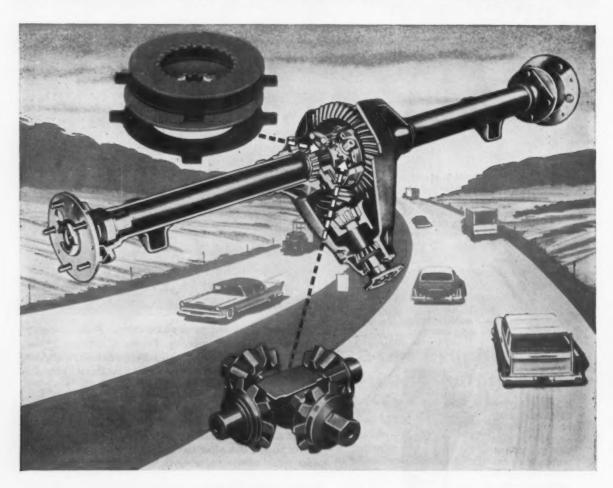
American Steel Foundries
ENGINEERING DIVISION

1166 Tennessee Avenue, Cincinnati 29, Ohio

METAL-WORKING PRESSES · PLASTICS MOLDING PRESSES · PUMPS · ACCUMULATORS

Problem-Solving Products from Republic

PROVIDE SUPER TOUGHNESS AND STRENGTH AT CRITICAL POINTS IN AUTOMOTIVE DIFFERENTIALS



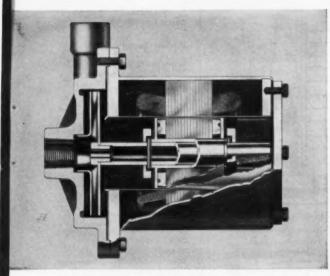
Modern passenger cars with increasing horsepower present problems in high speed stability and handling. The Powr-Lok differential, developed by the Dana Corporation, Toledo, Ohio, permits an automotive axle to transmit the greatest driving force to the rear wheel having the better traction.

Essential to the economical and dependable operation of these differentials are Republic Alloy Steels. Why? Because only alloy steels have the high strength, toughness, shock-resistance, and abrasion-resistance needed to withstand the severe service to which differential clutch rings and side gears are subjected.

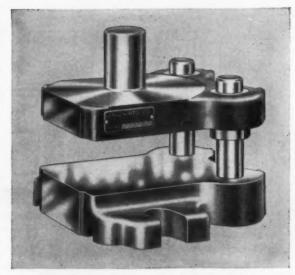
By specifying Republic Hot Rolled 8615 Alloy Bars, Dana engineers have reduced the possibility of a mechanical breakdown to an absolute minimum. These fine steels offer superior toughness and strength to withstand torque, fatigue, shock, and stress. Alloy steel's uniform response to heat treatment gives these rings and gears hard surfaces around tough cores providing maximum resistance to abrasion, friction, and wear.

In Republic Alloy Steels you will find highest strength values—plus an exceptionally high strength-to-weight ratio that permits the designing of thinner sections to save weight and hold down size without any sacrifice of needed strength.

Republic's 3-Phase Metallurgical Service—field, mill, and laboratory—is always available to help you apply these quality alloy steels to your product. It's confidential. There's no obligation. Send coupon for more information.



REPUBLIC TSTANIUM is machined for all wetted parts in this seal-less, leakproof centrifugal pump made by Chempump Corporation, Philadelphia. Titanium was selected for this application because of its maximum corrosion-resistance and exceptionally high strength-to-weight ratio. Chempump's exclusive design makes it possible and economical to use Republic Titanium for vital pump parts. Send coupon for more facts on machining and fabricating Republic Titanium.



REPUBLIC CHATEAUGAY PIG IRON meets demands for both strength and accurate machining in die sets manufactured by the Union Manufacturing Company, New Britain, Connecticut. As a result, Union has standardized on Chateaugay, law phosphorus, copper-free pig iron for maximum strength, flaw-free, easy-to-machine castings. Other superior characteristics of Chateaugay include its exceptional fluidity, even cooling, and fine dense grain structure. For complete information mail coupon.



REPUBLIC'S NEW HIGH STRENGTH POWDER, TYPE 6480, opens the way to new markets for new applications using sinterings for highly stressed applications using sinterings for highly stressed parts. Type 6460 can be used with existing operating equipment. It provides a minimum tensile strength of 60,000 psi at 6.4 density as sintered, and 100,000 psi heat treated. Type 6460 maintains its dimensional characteristics after sintering—less than .004 inches per inch shrinkage from die size at 6.4 density. Available in production quantities up to and includable in production quant

REPUBLIC STEEL CORPORATION DEPT.IA - 6440 1441 REPUBLIC BUILDING · CLEVELAND 1, OHIO Have a metallurgist call.

World's Widest Range of Standard Steels and Steel Products

REPUBLIC STEEL CORPORA' DEPT.IA -6440 1441 REPUBLIC BUILDING • CLI	
Have a metallurgist call. Alloy Metal Powder	☐ Pig Iron ☐ Titanium
Send more information on these Alloy Steel Type 6460 Powder	Republic products: Stainless Steel Titanium
Name	_ Title
Company	
Address	
CityZone.	State



How does this appear on your monthly statement?

In its present form (if it appears at all), it would have to be considered in the loss column because that's exactly what it is. Very often though, you'll find that when you give that pile of "waste" a chance, you can make money from it.

We have discovered time and time again that these slumbering piles of scrap contain valuable precious metal waste. If this material is kept apart from your general scrap and sent to Handy & Harman, our Refining Division can recover the full value of the precious metal . . . and return a worth-while payment to you.

At the right is a partial list of valuable waste sources: If you think you are throwing or giving away waste materials that might have some precious metal value, call or write the Handy & Harman refining station nearest you. We will be glad to tell you if there is money in it.

CHECK LIST FOR REFININGS

Plating Operations

Silver Plating Solutions
Gold Plating Solutions
Silver Precipitates, Sludges &
Sediments
Gold Precipitates, Sludges &
Sediments
Silver Coated Copper Wire &
Racks
Gold Coated Copper Wire &
Racks

Filter Pads
Silver Anode Ends
Silver Tank Scrapings

Production Operations

Silver Turnings, Chips, Shavings Silver on Steel Bearings Silver Steel Turnings Silver Blanking Scrap, Stampings, Strip, Wire Silver Grindings Silver Copper Scrap Silver Powder Mixtures Silver Screen Scrap Silver Solder Scrap Silver Brazing Alloy Scrap Silver Contact Scrap Silver & Gold Bi-Metal Scrap Silver on Steel, Tungsten, Moly Scrap Rejected Precious Metal Parts

X-Ray Laboratory

Electrolytic Silver Silver Hypo Solutions X-Ray Film

Miscellaneous

Silver Paint Waste, Wipe Rags, Paper, Cans Silver & Gold on Plastics, Ceramics, Glass, Mica, Quartz, etc. Silver & Gold on Moly, Tungsten, Wire Platinum-Bearing Material Mirror Solutions — Silver Nitrate Silver Chemicals

Refining Plants & Collecting Stations:

Bridgeport 1, Conn.
Chicago 22, III.—
1900 W. Kinzie Street
El Monte, Calif. (Los Angeles)—
330 North Gibson Road
New York 38, N.Y.—82 Fulton St.
Providence 3, R.I.—
425 Richmond Street
Toronto 2B—141 John Street

Your NO. Source of Supply and Authority on Precious Metal Alloys



ATLANTA, GA. - BRIDGEPORT, CONN. - CHICAGO, ILL. - CLEVELAND, ONIO - BETROIT, MICH. - LOS ANGELES (EL MONTE, CALIF.) - NEW YORK, N. Y. - GAKLAND, CALIF. - PROVIDENCE, R. I. - TORONTO, CANADA - MONTREAL, CANADA

Get the <u>right</u> abrasive for your flat surface grinding with the Gardner Service Plan

Only Gardner combines abrasive and machine experience, because only Gardner makes both! And Gardner Abrasives Specialists concentrate on disc grinding. For maximum production, longer disc life, investigate the Gardner Service Plan:



1

A survey of your grinding operations.



2

An actual in-service trial of Gardner Discs.



3

A close check of the results.

The Gardner Abrasives Specialist in your area will call at your request.

abrasive discs



U. S. Steel Supply Provides Customers with SMOOTH ACCURATE SHEARING

No. 12E-12 Steelweld Shear at U. S. Steel Supply, Seattle,
Washington, rated for steel plate 12" x 34". Being cut in photo is a plate, size 7" x 30" x 34". With hand crank on right end, this machine can be adjusted in a few seconds to have exactly the right knife clearance to obtain the finest cut for any thickness. To make this adjustment on guildtine-

ANY steel warehouses have two and often three shears, one of a ½" capacity for lighter thicknesses, another of ½" capacity for cutting ¼" to ½" material, and a third with 1" capacity for thicknesses over ½" and up to 1". At some of its warehouses, U. S. Steel Supply uses only one machine for cutting the various thicknesses—a Steelweld Pivoted-Blade Shear.

type shears usually requires several hours.

One machine takes the place of two or three,

because it is so easy to adjust the knife clearance required to obtain the best cuts for different thicknesses, which can range from lightest gauge metal to the heaviest plate within the capacity of the shear.

Thus, the investment in shearing equipment is kept low, yet the customers of U. S. Steel Supply are always assured of straight, smooth, accurately cut metal on every order.



GET THIS BOOK!

CATALOG No. 2011 gives construction and engineering details. Profusely illustrated.

THE CLEVELAND CRANE & ENGINEERING CO.

4853 EAST 282ND STREET . WICKLIFFE, OHIO

STEELWELD PIVOTED SHEARS

Stainless Steel welding information:

*Keep it clean

You get strong, tight joints when you weld Stainless Steel, but you have to make sure the surfaces have been thoroughly cleaned. Any grease, oil or dirt on the welded surface might affect the corrosion resistance of Stainless.

When you want to repair a crack, it's a good idea to chip out the cracked area completely so you're sure that only clean, solid metal is exposed. And remember, there are a lot of different kinds of Stainless Steel and they don't all react the same way. Be sure you handle each job right—check the "Stainless Steel Fabrication Book" before you start. If you don't have a copy of this 130-page guide, write on your company letterhead to United States Steel, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

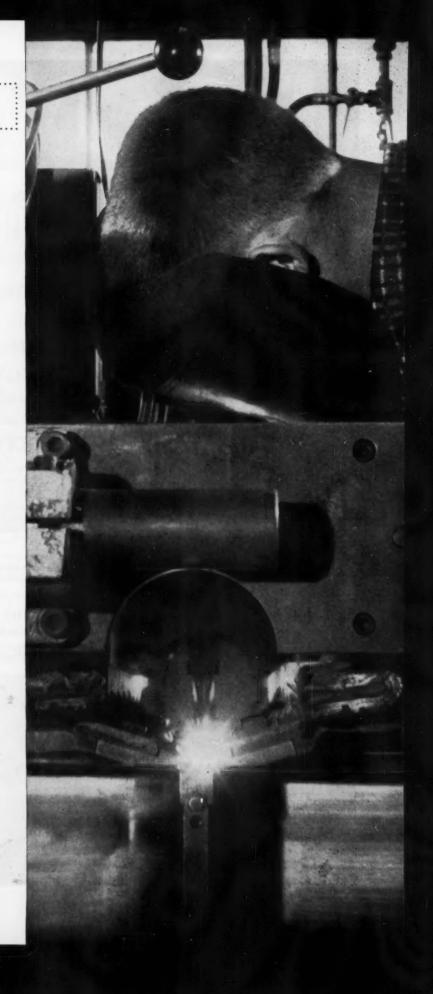
USS Stainless Steel is available through your USS representative or your local steel service center.

USS is a registered trademark

United States Steel Carporation—Pittsburgh
American Steel & Wire—Cleveland
National Tube—Pittsburgh
Columbia-Geneva Steel—San Francisco
Tennessee Coal & Iren—Fairfield, Alabama
United States Steel Supply—Warehouse Distributors
United States Steel Expert Company

United States Steel





PROVEN







PROVEN PERFORMANCE AND "KNOW-HOW" IN HIGH FREQUENCY RESISTANCE WELDING...

to produce ferrous or non-ferrous pipe and tube from a single YODER MILL!

Titanium, zircaloy, galvanized, 100% conductivity copper, in addition to all the common metals, are being welded on High Frequency Resistance Weld Mills.

Proven in 47 installations around the world, Thermatool High Frequency Resistance Welding provides the most uniform, highest quality weld possible at speeds of 300 feet or more per minute.

If you produce or use pipe or tube in your business, Thermatool and Yoder Pipe and Tube Mills can cut "downtime" and increase production while cutting costs.

For complete information write to either:

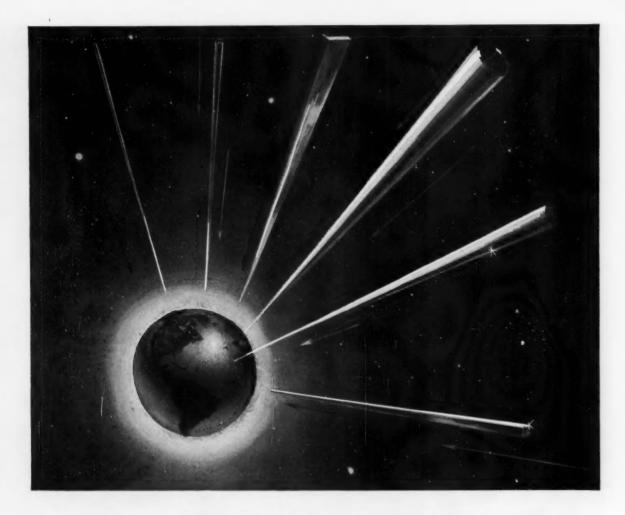
THE YODER

5510 Walworth Avenue Cleveland 2, Ohio

NEW ROCHELLE TOOL CORP.

320 Main Street New Rochelle, New York





Let's get down to earth about Exotic Metals!

Do you think titanium, zirconium, columbium, tantalum and other exotic metals are "out of this world" for your use?

You may be mistaken. Today the picture is changing. Increased demand and new production techniques are fast bringing their cost and availability down to earth for many commercial applications.

In fact, many companies are finding that their use often more than compensates for their extra cost in unparalleled corrosion resistance at high temperatures, better performance and longer service life.

If you have special problems of heat or corrosion resistance...a difficult application that demands unusual mechanical, physical, structural or nuclear properties...these metals deserve careful consideration. And Bridgeport is ready to help you use them.

LOOK INTO THE BRIDGEPORT METALS DEVELOPMENT PLAN

Bridgeport has pioneered in fabricating mill products from exotic metals from the start and has produced many miles of special metals tubes. We have originated many of the processing methods that are daily transforming these metals from costly rarities to readily available materials in a variety of forms—tube, rod, sheet and extruded shapes. This represents a substantial investment in time, skill and equipment. Because of our confidence in the rapid progress of exotic metals technology, we are prepared to work with you in their application on a cooperative basis. We welcome the opportunity to help solve your most difficult application problems. The coupon will bring prompt action. Send it today.

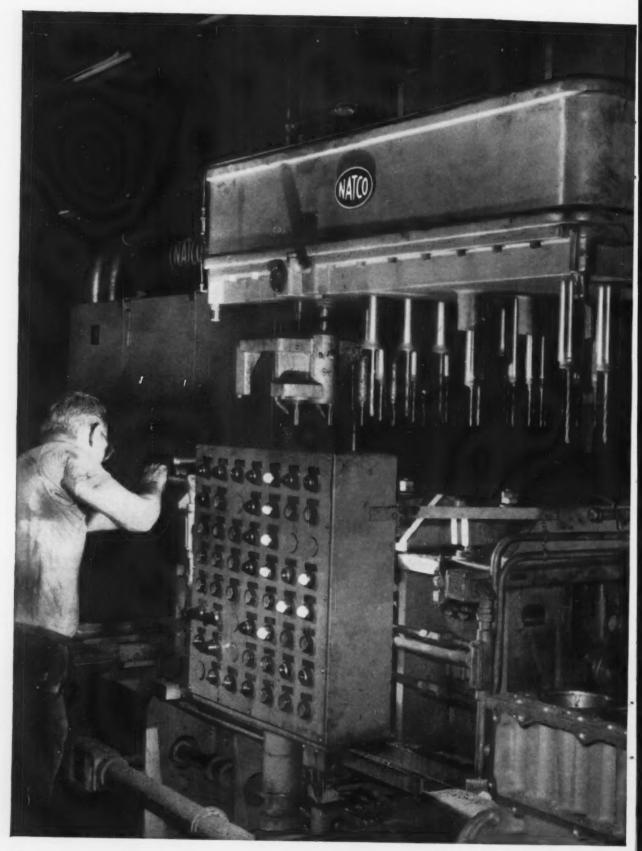
Dept. 8001, BRIDGI Please send inform DEVELOPMENT PLAN.			
Name			Title
Company			
Address			
City	Zone_	State	

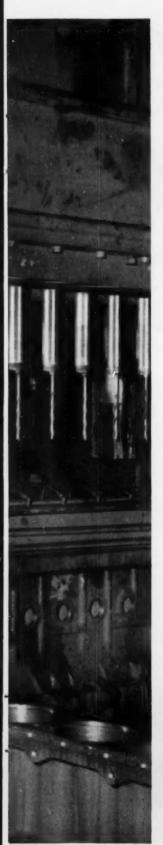


BRIDGEPORT BRASS COMPANY

BRIDGEPORT 2, CONNECTICUT

Specialists in Metals from Aluminum to Zirconium





Unique Natco Transfer Machine

One head does the work of four

New Static Control saves space, maintenance

Although it takes up only 125 sq. ft. of floor space, this Natco performs more than 36 operations per minute!

This unique machine combines four working stations under a single compact head — 32" x 57", incorporating 31 spindles. Fixture is Natco 6-station straight line index type. With a part in each station, the following operations are accomplished simultaneously:

Station 1: Load Station 2: Drill 7 holes Station 3: Drill 5 holes Station 4: Chamfer 7 holes, drill 5 holes Station 5: Tap 7 holes Station 6: Unload

Used for the first time in a transfer machine, static controls provide a new degree of reliability. Because there are no moving parts, maintenance is virtually eliminated. And this panel occupies 30% less space than conventional controls require.

Combining operations leads to economy — in this case, saved floor space, easier maintenance and all the advantages automation offers.

Call your nearby Natco representative. He can tell you how a Natco can reduce your costs, improve your methods.

Multiple-spindle drilling, boring, facing and tapping machines. Special machines for automatic production.

NATIONAL AUTOMATIC TOOL COMPANY, INC.

Dept. 305-A, Richmond, Indiana

Natco offices in Chicago, Detroit, Buffalo, New York, Boston, Philadelphia, Cleveland and Los Angeles. Distributors in other cities.







AS PROFITS SHRINK AND COSTS CONTINUE TO GO UP, MORE THAN JUST "THE VENDOR'S QUOTATION" IS NEEDED!

Certainly you have to depend on your vendors...but how much?

The answer is "completely"! Your job is tough enough without your having to be a machine design or materials handling expert, too.

When you're specifying equipment, you should *only* have to provide an objective explanation of the problem, as well as the understanding of the product and related processes.

The vendor is the expert who's supposed to analyze that problem, then design and supply the necessary equipment. And the equipment should be ready to do your job when it's installed, too. Your overhead can't afford the lost production time and expense while you test and prove the vendor's equipment for him. After all, your original specifications called for equipment to do a particular job.

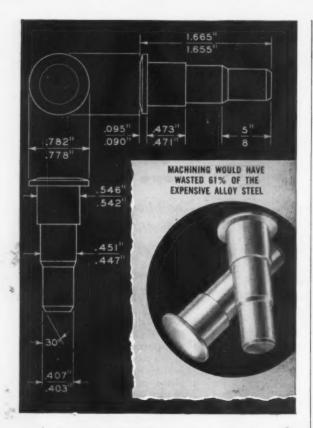
Sciaky has always accepted the vendor's full responsibility for design, manufacture and *delivery into production* according to the original specifications. That's why Sciaky resistance welding and production equipment satisfies the requirements of your particular job. That's why Sciaky operates the only independent, fully staffed and equipped Research Center devoted to advancing the application of resistance welding processes.

Why take less than the full advantage of consulting with a Sciaky Application Engineer the next time you are considering equipment. No obligation, of course.

The manufacturers of automobile wheels took that advantage. As a result those wheels are now assembled with automatic resistance welding that includes four other operations—not only assembled better, but faster and at lower cost. Write for the details of this unusual high production application that satisfies the most rigid specifications for weld quality.







by cold heading

The tough alloy-steel (4615 or 8615) used for this studied created a production problem. Machining would waste a lot of metal. Even cold heading seemed wrong, because of the hardness and poor flow characteristics of the metal.

But Progressive did it. We cold headed it—and produced naturally stronger studs. We used bar stock of nearly half the diameter needed to machine it, and got over 2½ times as many studs from the same amount of metal.

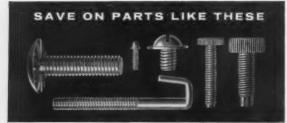
You can make similar savings. Write for more case histories in our "Bank Book of Savings in Cold Heading."

MACHINE SCREWS AND NUTS, SEMS FASTENERS, SLOTTED TAPPING SCREWS AND PHILLIPS HEAD SCREWS

THE PROGRESSIVE MFG. CO.

Division of The Torrington Company

78 Norwood St., Torrington, Connecticut



AMONG OPERATIONS PERFORMED BY PROGRESSIVE are heading and extruding simultaneously; flattening; piercing; drilling; bending; pointing; fluted or diamond knurling; trimming; turning enons, shoulders or recesses; struck or sawed slotting; notching.

KUTZTOWN Skill

for the Oil Industry . . .

The Exchangers pletured here were completely machined and assembled under the most rigid plant and outside inspection. Skilled machinists at Kutztown have the training and experience to finish the most intricate castlngs.



Modern Machine Shop

At Kutztown you will find equipment capable of boring, turning and facing a casting up to 16 feet in diameter. Our planers can easily finish work up to approximately 16 feet in length on 60 inch open side tables. Drill presses, with up to seven foot arms, handle adequately the drilling of large castings. No order is too large or too small for Kutztown to handle. Your inquiry is most welcome!

We'll be happy to place your name on our mailing list to receive regular issues of the "Kutstown REVIEW."

KUTZTOWN FOUNDRY & MACHINE CORP.

KUTZTOWN, PENNSYLVANIA

MUNDT

PERFORATED METALS

The few perforations illustrated are indicative of the wide variety of our line—we can perforate almost any size perforation in any kind of metal or material required. Send us your specifications.

Sixty-seven years of manufacturing perforated metals for every conceivable purpose assure satisfaction.

Write for New Catalog of Patterns



TIN, STEEL, COPPER, ALUMINUM, BRONZE, BRASS, ZINC, ANY METAL, ANY PURPOSE

CHARLES MUNDT & SONS 80 FAIRMOUNT AVE. JERSEY CITY, N. J.

"We strap 10,000 more cartons a week with the

Gerrard Automatic Strapping Machine,"

says Donald Janisse, Warehouse Foreman, Oostburg Canning Company, Oostburg, Wisconsin



"Since we installed two USS Gerrard Model 12 Automatic Strapping Machines, using USS Gerrard Round Steel Strapping, our packaging production has increased by over 10,000 cartons a week. One man and one semiautomatic machine have been

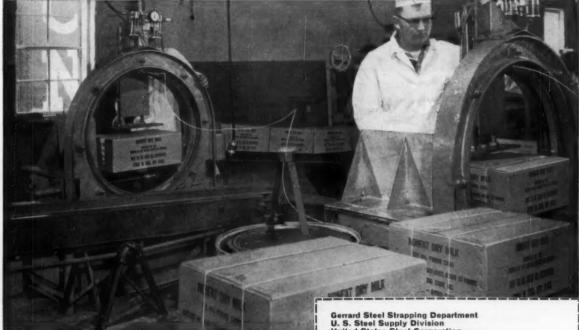
eliminated, we get more uniformity of strapping tension and more secure packages, and virtually all accidents in our strapping operations have been stopped.

"All our packaging of non-fat dry milk is the result of government contracts," continues Mr. Janisse. "If we fail to ship a certain number of pounds per week, we are subject to a fine, which obviously could be costly. A government inspector, who is in the plant at all times, continually checks the uniformity of our packaging materials. Under our old manual strapping system, six out of every hundred strapped cartons had to be pulled out of

the assembly line for retying due chiefly to improperly placed straps. This caused a bottleneck in our operations. Now, with the USS Gerrard Model 12 and USS Gerrard Round Steel Strapping, round straps are applied uniformly, production has speeded up and there is less chance of our having to pay a fine."

The low-cost, lightweight Gerrard Model 12 is automatic-makes up to 24 ties a minute. Using economical USS Gerrard High-Tensile Round Steel Strapping, in any size from 14 to 181/2 gauge, you can tie packages of varying shapes and weights without readjusting the machine. Tension can be pre-set and maintained on all packages, and a compression device holds them in position during the tying operation.

For more details, contact your USS Gerrard sales representative. And be sure to mail the coupon for the folder, and for the Gerrard Blue Book of Packaging which gives information on all USS Gerrard products. USS and Gerrard are registered trademarks



Gerrard Steel Strapping Dept., **United States Steel Supply** Division of **United States Steel**



U. S. Steel Supply Division United States Steel Corporation 298 South La Saile St., Chicago 4, III.

Please send me folder on the Automatic Strapping Machine and the 36-page GERRARD Blue Book of Packaging. No obligation

Company.

Address. State

Have Salesman call [



When Detroit agrees on final changes for next year's cars, our two Philadelphia plants move with all possible speed on jigs and dies. United fits right into the speed picture. They always have space to Detroit for us when we need it. And they use kid gloves in handling our shipments!"



WALTER BOYD, United's cargo representative, watches the shipment land at Willow Run – on time. You find this dependability throughout United. People go out of their way to give each shipment personal attention.

UNITED AIR LINES

LOW RATES are only part of the story. United's speed and 80market coverage on both passenger and all-cargo planes offer distinct competitive advantages.

IT COSTS NO MORE FOR EXTRA DEPENDABILITY-ON UNITED, THE RADAR LINE

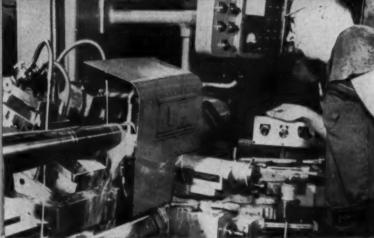
For service, information or free Air Freight booklet, call the nearest United Air Lines Representative or write Cargo Sales Division, United Air Lines, 36 South Wabash Avenue, Chicago 3, Illinois

Caterpillar

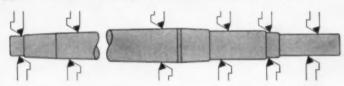
Tractor Co. gets results . . . with Talide S-92



HELICAL BLANK



engines, motor graders and earthmoving equipment, has been using cost-cutting TALIDE tools for over 10 years to produce parts. Typical example of savings obtained is illustrated below:



CRAWLER TRACTOR AXLE SHAFT

P	Part	Crawler Tractor Axle Shaft	Tools	12 Talide TB-164 1/2" I.C. Triangular TALIDE Throw-Away Inserts mounted in Klamp-Lok Toolholders, Grade S-92.
	Material	SAE 8645 Steel Forging 31/4" dia. x 381/2" long, 3.6mm Brinell Hardness.		
	Operation	Rough turn all diameters, form tapers, shoulders, and steps.	Depth of Cut	%"
			Feed	6" per min
	Machine	Monarch Mona-Matic No. 21 Tracer Lather, size 54".	Speed	S.F.M. 387—R.P.M. 340
			Coolant	Soluble Oil and Water
	Results	TALIDE Grade S-92 turned 42 shafts per grind. Inserts produced a total of 294 sh	were ground as	n average of 6 times and

Call in a Talide sales engineer to recommend proper tooling for your machining operations, or write for 76-page catalog No. 57-G. METAL CARBIDES CORPORATION, 6001 Southern Blvd., Youngstown 12, Ohio.

carbide grade produced 235 shafts.





The bright, smooth surface of the sheet steel which International Harvester's Motor Truck Division demands

for its light trucks is apparent here on the cab assembly line. Good surface speeds production in the paint shop.

Pittsburgh Steel's Sheet Provides Beauty, Durability For International Trucks

How do you combine ruggedness with the contemporary styling now going into light trucks?

International Harvester Company meets that challenge so well that one International model sells as a three-door station wagon. That's the Travelall, designed as a commercial, personnel carrier, which typifies the clean design of all International pick-up and panel trucks.

International combines rugged-

ness with good styling, in large part, through the use of cold rolled sheet steel, like that supplied by Pittsburgh Steel Company.

Here's what International expects from steel sheet and what Pittsburgh Steel provides consistently in shipment after shipment:

- Deep Drawing Quality. Many of the component parts have severe bends and sharp raises.
- Weldability. International spot welds sheet sections eight feet long in a series of welds on automatic machines. If welds vary in quality, assembly line operations must be interrupted.
- Flatness. When long sections are being welded, flatness of sheet is essential. Waviness would prevent close alignment of sections being welded and make it impossible to

use automatic welding machines on the plant's assembly lines.

· Dense Surface With Extra Smoothness. International insists upon, and gets, a near perfect surface. Pittsburgh Steel's cold rolled sheet, with its smooth and dense surface-free of defects-enables International to apply multi-coats of enamel without a primer. The production economies are passed on to International's customers.

International truck bodies go from assembly line to paint shop after an alkaline wash, a phosphate bath and an acid rinse.

Only the best sheet surfaces make this practice possible.

Since the Springfield plant of International Harvester's Motor Truck Division can process about 10 million pounds of sheet a month, any supplier of sheet must be capable of consistently meeting International's requirements on a long-term basis.

The skilled steelmakers and the new rolling mill of Pittsburgh Steel Co. meet these demands from day to day and shipment to shipment.

Put Pittsburgh Steel's sheet to work for you. You get faster production, fewer rejects, more economical operations and a more durable product with a pleasing appearance.

You can start benefiting today. Just get in touch with the nearest district office listed below.

Fast production of cowl bars without rejects is possible only with sheet of good formability and shapeliness.





Weldability of the sheet shows up here where the door post, held by quick-action clamps, is spot welded to the cowl on the cowl sub-assembly line.



All components of the nearly completed cabs seen here are made of sheet steel. Note the sharp raises in the door post on which the cab door will be hung. This part, made of Pittsburgh Steel, must have good drawing quality as well as weldability and a surface that will take a fine paint job.

Pittsburgh Steel Company **Grant Building** Pittsburgh 30, Pa.



District Sales Offices

Atlanta Chicago Cleveland Dallas

Detroit Houston

Dayton

Los Angeles **New York** Philadelphia Warren, Ohio

Pittsburgh Tulsa



JOBBING SHOPS LIKE CECOSTAMP'S VERSATILITY AND OPERATING ECONOMY

The modern sheet metal jobbing shop shown above uses four Cecostamps-one-30 x 24, two -66×48 , and one -96×60 , forming titanium, stainless and cold rolled steel, terneplate, aluminized metal and aluminum. The bulk of their work is experimental runs for aircraft, automotive and defense industries. Cecostamps have enabled them to meet both quality requirements and delivery dates—with a saving in production costs too!

The variety of blows and "squeezes" available on the Cecostamp, the wide range of shapes that can be made, afford a versatility appreci-

ated by jobbing shops. In addition, they like the adaptability of the Cecostamp for coining, embossing and other special operations. The use of inexpensive zinc-alloy (or even wood) dies for short runs means money-saving without sacrificing quality. Concentration of controls and the immediate response of the ram to the movements of the operator provide an efficiency of operation that reduces fatigue and promotes higher production capacity-and the Cecostamp uses air only when it is in operation—a novel shut-off valve cuts off the air when the Cecostamp is idle. Write for our Bulletin 30-L-5.

CHAMBERSBURG ENGINEERING COMPANY

CHAMBERSBURG, PA.

CHAMI























The recession is fading fast... are you ready for the rebound?

Industry is on the move again. But management has learned valuable lessons from the recession. In the future they will exercise extremely *close* control of costs. To satisfy this sharp-eyed attitude, unit costs and prices must be brought down to a rock-bottom low. So make sure *your furnaces* can help cut production costs. Make sure your furnaces are ready *now* to operate at peak efficiency during the months to come.

Consider the "vulnerable" areas in your furnace, for example—areas subjected to flame impingement or heavy loads, or exposed to abrasion or corrosion. Or other working areas where heat must pass *through* the refractory. These are the areas where you can substantially cut production costs—particularly if you use one of our special-purpose Super Refractory materials. The three examples on this page show how *large* these savings can be.

HERE'S HOW YOU CAN START CUTTING COSTS:



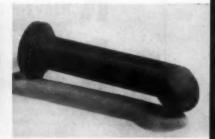
it will take less than an hour to read these two booklets about the applications—and properties—of Carborundum's unique, new super refractories. Send for them today, to Refractories Div. Carborundum Company, Perth Amboy, N. J., Dept. B. -118 A.



LAST 5 TIMES AS LONG. In this high temperature atmosphere furnace, parts travel through on a cycle from cold to 2100°F to cold in 1 hour and 10 minutes. Metal fixtures warped, stuck to parts. Thicker fixtures absorbed furnace heat. Super Refractory fixtures outlasted the alloy 5 to 1, cut weight, ended sticking, and cost less as well.



STOP ALL MAINTENANCE FOR 2 YEARS. Notches in this walking beam furnace lasted 4 to 6 months, and furnace had to be shut down almost weekly for repair on the notches (on which bars being heated rest). When Super Refractory rests were installed, the furnace ran for 2 years without any repair at all, and ran another year with only 10% replacement. Cost? Less than half that of alloy.



HANDLES CHEMICAL ATTACK FOR 5 YEARS. This nozzle sprays 150°F acid into an absorbing chamber where gases are at 1800°F. This Super Refractory easily withstands this tough combination of both corrosion and sharp temperature gradient, and lasts over 5 years, compared to 2 months for metal.

CARBORUNDUM

Registered Trade Mark



FORGING

IT WILL SAVE YOU MONEY!

Compare and you'll agree that Ritco "Bright Finish" Forgings offer many important production savings. Because they are made to close-tolerance specifications, and have a flawless finish, Ritco Forgings require minimum machining. Their smooth, accurate surfaces speed up assembly, help reduce costs still further. Also, their dense, fibrous structure and controlled grain flow add greater strength and toughness to shock and stress points . . . assure maximum impact resistance and fatigue strength.

It will pay you to write Ritco into your product specifications. Ritco Forgings are produced in a wide range of metals and alloys, and in many designs.

> Send us your blueprints now for estimates at no obligation!

RHODE ISLAND TOOL COMPANY

Member Drop Forging Association

144 WEST RIVER STREET . PROVIDENCE 1, R. I.

UGGED...AND

EADY TO HOB YOUR **HEAVY-PITCH GEARS!**

The New Lees-Bradner

MARK II, 16"x 18" MODEL HOBBING MACHI

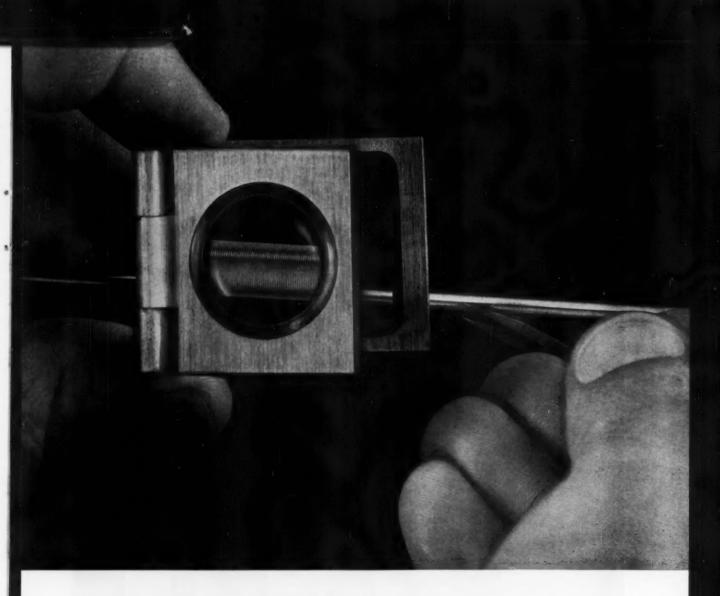
After three years of development work, we're proud to announce the introduction of the new Lees-Bradner Model R Mark II, 16" x 18" Heavy Duty Hobbing Machine. The Mark II is designed to generate gears for trucks, earth-moving machinery, tractors and other equipment where heavy-pitch gears are required.

Features include optional refinements such as a lead differential and a power infeed unit for hobbing worm wheels.

See your Lees-Bradner distributor or write the company direct for additional information on this efficient new machine.

Standard equipment: 6" manual hob shift To order: 6" electric hob shift





How "high fidelity" in music spring wire licks a big production problem

Leading producers of carbon paper apply the carbon coating by means of steel rods closely wound with hair-fine music wire. The wire-to-wire valleys, as determined by wire diameter, control the amount of carbon deposited.

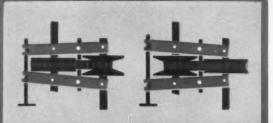
Here is a case where product quality and smooth, uninterrupted production are both dependent on extreme uniformity in the fine wire being usedextreme uniformity in diameter, finish and temper.

This super-critical wire is produced by the Worcester Wire Works Division of National-Standard. Because it does the best job by production comparison, it's naturally preferred. Keep this in mind and check with the Worcester Wire Works Division on your next need for fine wire if quality control is at all a factor. You'll get the finest of service, too!

NATIONAL

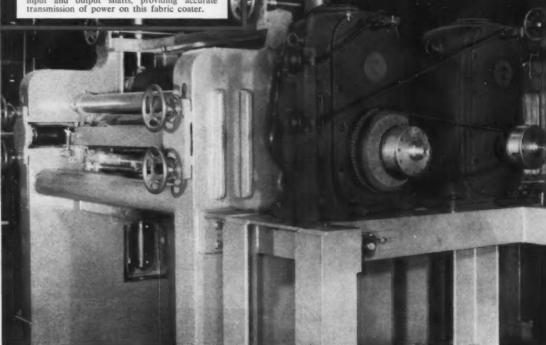


STANDARD



In principle . . . in performance . . .

MOST ACCURATE OF ALL MECHANICAL VARI-ABLE SPEED DRIVES. Turning P.I.V. control screw varies effective diameters of two sets of conical grooved wheels—spreading one set, closing the other. Self-tooth-forming chain automatically adjusts to provide desired ratio between input and output shafts, providing accurate transmission of power on this fabric coater.



for positive, infinitely variable speed control

. . . there's nothing like P.I.V.

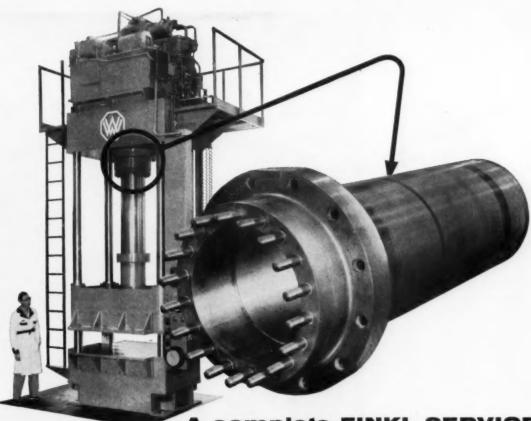
Here's a variable speed drive that is truly unique. Unlike conventional designs, Link-Belt P.I.V. with its all-metal chain drive is *not dependent on friction* for transmitting power.

P.I.V. permits fast, easy speed changing too. You can select any speed in its range—find it instantly, hold it indefinitely. No bother stopping the drive.

Because Link-Belt P.I.V. (Positive, Infinitely Variable) drives are fully enclosed, atmospheric conditions can't affect their efficiency. They're made in 8 sizes, 16 standard types. Ask your nearest Link-Belt office or authorized stock-carrying distributor for Book 2274.



LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants and Sales Offices in All Principal Cities Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarboro (Toronto 13); South Africa, Springs. Representatives Throughout the World.



A complete FINKL SERVICE FROM BLUEPRINT TO FINISHED PART

Many companies profit from Finkl's complete package service on finished machine parts. Williams-White & Company of Moline, Illinois, manufacturers of heavy machinery, called on Finkl for the forged steel, main cylinder shown above. It is used on a 300 ton plastic molding press employed for pilot molding procedures prior to production molding runs.

The entire cylinder was handled in our plant. Made of C-1035 steel from our electric furnace melt shop, the part was forged, heat treated, rough and finished machined under one roof. The 17" bore was ground to $^{+.003''}_{-.000''}$. Final dimensions, as delivered and installed, were 6'-1" long with the main body 22" in diameter.

With modern equipment and skilled craftsman, we do jobs both larger and smaller than the cylinder shown. The important thing is we do all of them well. Next time you are planning a machine part call a Finkl engineer and learn how you can profit by having it done under one roof.



A. Finkl & Sons Co.

2011 SOUTHPORT AVE . CHICAGO 14, ILLINOIS

Offices in: DETROIT • CLEVELAND • PITTSBURGH • INDIANAPOLIS • HOUSTON • ALLENTOWN • ST. PAUL COLORADO SPRINGS • SAN FRANCISCO • SEATTLE • BIRMINGHAM • KANSAS CITY • BOSTON • LOS ANGELES Warehouses in: CHICAGO • DETROIT • BOSTON • LOS ANGELES





CHRISTMAS SEALS AT WORK!

A most important medical discovery during the past year was a blood test for the detection of tuberculosis.

Developed at Northwestern University under a research grant from the National Tuberculosis Association, it is now undergoing widespread trials. This was made possible by your purchase of Christmas Seals.

Since 1907, the work financed by Christmas Seals has helped cut the TB death rate 95% — but within the next 20 years almost 2,000,000 Americans will be afflicted with tuberculosis. So, send in your contribution today, please.

Buy and use Christmas Seals

This space contributed to the National Tuberculosis Association and its affiliates by

The IRON AGE



Type 304 stainless plate, dimensions: 6%" thick x 75" diameter. Weight, 8655 lbs.

take a look

... at the clean edges of this stainless plate

accurately cut by Carlson

This stainless plate illustrates something that's almost a Carlson exclusive. Few producers can make plates of such heavy gauge, and fewer still have the long experience in flame cutting stainless to precise dimensions. To develop the proper equipment, the exact gas and iron powder formula, and the special nozzles, took Carlson engineers years of effort. But the result was worth it.

The edges achieved by these improvements reduce the cost of subsequent machining operations. And every Carlson stainless plate—whether heavy or light gauge—carries its own identification. Its chemical and physical properties are known and recorded. Its dependable performance on the job is assured.

The complete reliability of every Carlson service will materially reduce your ultimate costs. Our specialists make certain that your instructions are followed in every detail. Write, wire or phone for further information on all our services in stainless steel.

C.O.CARLSON Inc.

Stainless Steels Exclusively

120 Marshalton Road THORNDALE, PENNSYLVANIA District Sales Offices in Principal Cities



PLATES • PLATE PRODUCTS • HEADS • RINGS • CIRCLES • FLANGES • FORGINGS • BARS AND SHEETS (No. 1 Finish)

Let's LAUGH a minute

Of course everyone knows that heat treating today has become one of the most serious technical and vital functions of the current metalworking activity. But a smile and laughter are still also important and the cartoons shown here are for that purpose.

We hope they make you grin and when it's heat treating services you require or skilled, technical advice about part design or heat treatability, check with

METAL TREATING INSTITUTE 271 NORTH AVENUE NEW ROCHELLE, NEW YORK

or any member listed below.







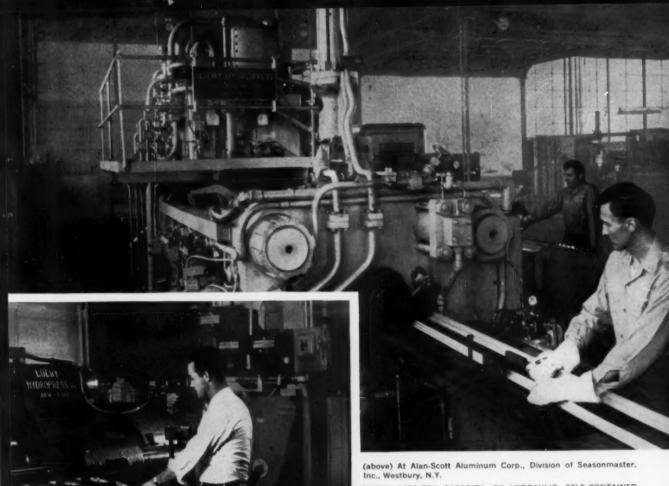
" ARE YOU SURE YOU UNDERSTAND THE PROPER BLAST CLEANING PROCEDURE?"

American Metal Treatment Co.
Elizabeth, New Jersey
Anderson Steel Treeting Co.
Datroit, Blichigan
Benedict-Miller, Inc.
Lyndhurst, New Jersey
Bennett Heet Treating Co., Inc.
Newark S, New Jersey
Commercial Metal Treating, Inc.
Bridgeport, Connecticut
Cock Heet Treating Co. of Texas
Heusten 11, Texas
The Dayton Forging & Heating Treating Co.
Dayton S, Ohio
Dominy Heet Treating Corp.
Dallas, Taxas
Drever Company
Bethayres, Pennsylvania
Greenmen Steel Treating Company
Worcoster S, Massachusetts
Fred Heinzelmen & Sonn
New York 12, New York

Alfred Heller Heat Treating Co. New York SS, New York AND LE

Hellywood Heat Treating Co.
Los Angeles 38, California
Ipsenich of Reckford, Inc.
Rockford, Illinois
Ipsenich of Connede Ltd.
Torento, Untario
L-R Heat Treating Company
Newark, New Jersey
The Lakesides Steel Improvement Co.
Cleveland 14, Ohie
Metallurgical, Inc.
Minnapoits 14, Minneoota
Metallurgical, Inc.
Kanas City 6, Miscowei
New England Metallurgical Corp.
South Basten 27, Masschwotts

Owego Heat Treat, Inc.
Apaiathia, New York
Poule Products Company
Bt. Louis 10, Missouri
Pittsburgh Commercial Heat Treating Co.
Pittsburgh 10, Pennsylvania
Pittsburgh 18, Pennsylvania
The Queen City Steel Treating Co.
Cincinenti 25, Ohie
J. W. Rex Company
Landale, Pennsylvania
Stanlay P. Rockwell Company
Hartford 12, Connecticut
Scott & Son, Inc.
Rock island, Illinolo
Syracuse Heat Treating Corp.
Syracuse, New York
Temperature Processing Co.
Nerth Arlington, New Jersey
CANADA
Ipsenlab of Connels Ltd.
Treate, Ontario



LOEWY 1250-TON-CAPACITY OIL-HYDRAULIC SELF-CONTAINED EXTRUSION PRESSES IN OPERATION

(left) At Arvin Industries, Inc., Columbus, Ind.

Loewy offers not only the finest extrusion presses, but also expert counsel on production planning

No longer is it enough for a pressbuilder to produce machinery which performs at high speed and with great precision and economy. His close contact with the individual business problems of many enterprises places him in the seat of a counselor, where his familiarity with the needs of industry and its problems of obsolescence, changes in trends and markets, new opportunities or local conditions, can be extremely valuable. Certainly in the ever-growing and complex field of extrusion his judgment can be of great value.

There is hardly any new development in our fast-moving technology which does not depend on the almost unlimited possibilities of extrusion. This is particularly true in the nuclear industry and the field of rockets and missiles. The application of extrusion widens every day. According to a recent report, school architects alone specified 75 aluminum

extrusion applications, And a recent exhibit singled out 50 different fields in which extruded metals are being utilized.

Baldwin-Lima-Hamilton's Loewy-Hydropress Division, which pioneered extrusion in America, keeps a sharp eye on all developments in the markets for extrusion. And when you buy your extrusion equipment from us, we tackle not only problems relating to equipment design, but also those relating to production economy. This extra assistance goes with your order as an integral part of our service.

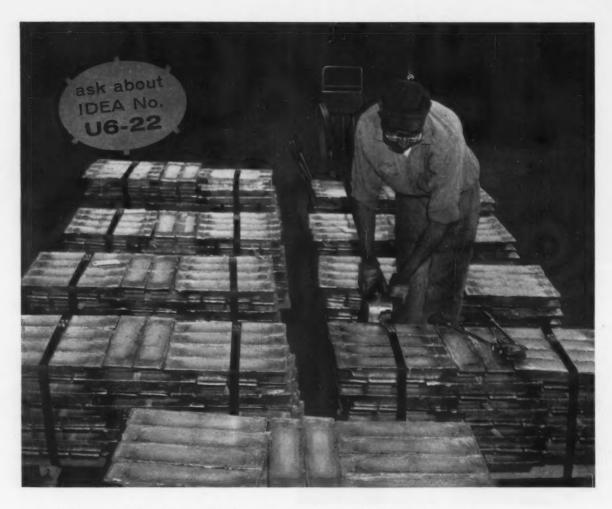
You may also be interested to learn that special attention will be given to your inquiries on the design, construction and implementation of complete plants ready to operate, including the selection of the site and production planning, or what are known as turn-key projects. For complete information on our facilities to serve you, write to Dept. A-11.

Loewy-Hydropress Division

BALDWIN · LIMA · HAMILTON

111 FIFTH AVENUE, NEW YORK 3, N.Y. Rolling mills . Hydraulic machinery . Industrial engineering





Work with your AIM*...Federated Metals does... Steel strapping cuts ingot loading time in half

FEDERATED METALS Division of American Smelting and Refining Company, Whiting, Ind., was looking for ways to speed handling and unloading of non-ferrous alloys. Their Acme Idea Man suggested a method using heavy-duty Acme Steel Strapping (Idea No. U6-22).

Now ingots are strapped to skids and these units are loaded into box cars and trucks with lift trucks. Formerly, the ingots were loaded loose on skids brought to the cars and stacked by hand. The new method cuts loading time by 50%, and customers report unloading costs are reduced by as much as 75%!

Unitizing ingots enables Federated Metals to double and triple storage capacity, too, because the units can be stacked for maximum utility of warehouse space.

*Work with your Acme Idea Man to improve your materials handling from a time and money-saving standpoint, as well as for increased product protection. Write Dept. IFU-118, Acme Steel Products Division, Acme Steel Company, Chicago 27, Illinois. In Canada, Acme Steel Company of Canada, Ltd., 743 Warden Ave., Toronto 13, Ontario.

Acme Idea Man
Andy Bassi assists
Federated Metals
and many other
companies with their
packaging and
materials handling
problems.







UNITED.

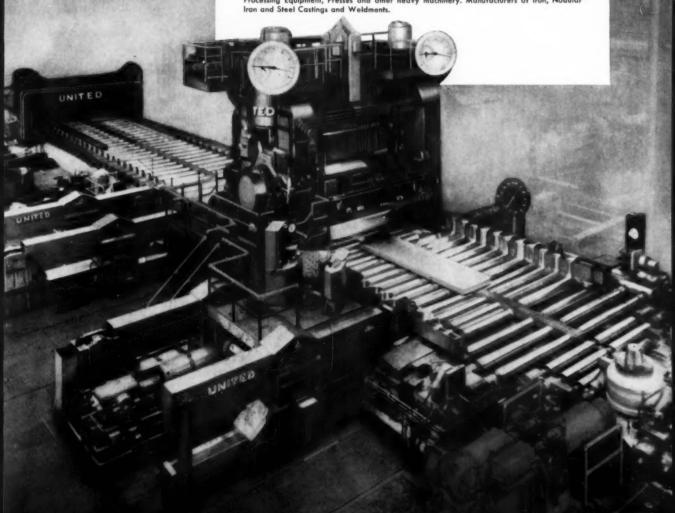
160" MILL FOR ROLLING ALUMINUM PLATE

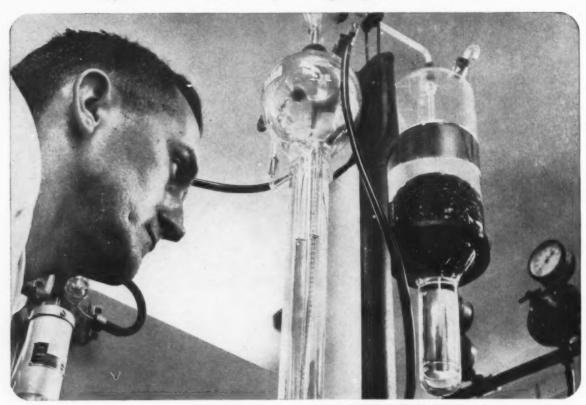
UNITED ENGINEERING AND FOUNDRY COMPANY

Plants at Pittsburgh, Vandergrift, Youngstown, Canton, Wilmington

SUBSIDIARIES: Adamson United Company, Akron, Ohio; Stedman Foundry and Machine Co., Inc., Aurora, Indiana

Designers and Builders of Ferrous and Nonferrous Rolling Mills, Mill Rolls, Auxiliary Mill and Processing Equipment, Presses and other heavy machinery. Manufacturers of Iron, Nodular Iron and Steel Castinas and Weldments.





QUICK, FAST TESTING for carbon content is done not once or twice but 8 times per melt in A-L's Chem Lab with this direct reading Leco carbon determinator.

Carbon content checked 8 times during melt to guarantee A-L tool steel hardenability

Lab tests for carbon eliminate your guesswork; provide high hardness, uniform Lardenability, reproducible tool performance.

Because carbon has the greatest influence on hardenability, Allegheny Ludlum watches it carefully during the melt. Testing a specimen for carbon takes only a few minutes. Therefore, A-L checks for carbon content 8 times during the melt, and makes the necessary adjustments to insure accurate control of carbon. This control means Allegheny Ludlum can hold carbon content to a closer range than most customers specify.

Carbon control at Allegheny Ludlum assures you of precise response to heat treating. This control in the melt brings you predictable, high hardness, uniform hardenability and reproducible tool performance.

This is just one of the many things A-L does to insure

high quality. Here are some others: close control over forging techniques, rigid temperature-time programming, careful testing of billets prior to processing to insure good surface and sound interior, control over annealing to give you the right hardness for your exact machining operation, thorough metallurgical testing to insure top tool steel quality and meeting of your specifications.

Allegheny Ludlum stocks a complete line of tool steel sizes and grades. Call your nearest A-L representative; you'll get quick service and counsel on such problems as heat treating, machining, grade selection, etc. Or write for A-L's publication list which gives full data on the more than 125 technical publications offered. They'll make your job easier.

ALLEGHENY LUDLUM STEEL CORPORATION, Oliver Bldg., Pittsburgh 22, Pa. Address Dept. A-111

W8W-7261

ALLEGHENY LUDLUM

Tool Steel warehouse stocks throughout the country...Check the yellow pages every grade of tool steel...every help in using it



Electronic Drafting Unit

Can the draftsmen who draw the original blueprints of almost all man-made objects be replaced by an electronic machine? It's a possibility, although not in the immediate future, according to one maker of drafting machines. The firm is conducting experiments on applications of electronics to mechanical drawing.

Steel Probe Awaits Pricing

Holding back on any further steel industry probe, Sen. Kefauver's Senate Antitrust subcommittee is waiting to see whether a rumored January steel price hike materializes. If prices do go up, sparks will fly again, a committee aid says. The committee has been quietly revising its figures and charts and will be ready to resume probe when a good opportunity arises.

Basic Openhearth Roofs

The swing to basic openhearth roofs continues at a rapid rate. Over 70 basic roofs are now in service or on order. Less than 20 all-basic openhearths were in service at the start of the year. The spurt owes its start to the performance of a recently developed sprung arch basic roof.

Diaphragm Seals Piston

Designed to meet the specific need for a seal with low friction, reliability, and 100 pct sealing efficiency, a diaphragm moves right with the piston. As the piston moves downward, the seal rolls off the piston wall onto the cylinder wall. The reverse action takes place on upward movement of the piston. Seals have self centering action and can withstand pressures up to 500 psi at temperatures from -80° to $+250^{\circ}$ C.

Shortage for Carbuilders?

Contrary to original forecast, fourth quarter freightcar production will exceed that of the third quarter. With over 4000 cars in the inquiry stage, carbuilders are uneasy about first quarter steel supplies. The reason: Tube mills use the same billet stock from which structural shapes are rolled. Carbuilders feel increasing demand from

tube mills, as well as that of structural fabricating and carbuilding shops, will tighten production rolled from billet steel.

Lift Strength-Weight Ratio

A combination of metallurgical and fabricating techniques to be unveiled shortly is said to make a popular grade of stainless competitive in both price and weight with aluminum for many applications. Method involves designing in strength by taking advantage of the properties of the material. New techniques then fabricate parts to develop full strength.

Color for Al Die Castings

Research in aluminum processing shows real promise of developing die cast parts that can be anodized for decorative purposes. The technique is said to use vacuum methods.

Appliance Demand Grows

Makers of electric housewares report growing backlogs. Recently introduced models are particularly tight. The shortage results from a surge of late business coming after a period of depressed demand. The strong comeback in the second half is expected to bring this year's appliance sales close to the 1957 level.

Charge with Briquettes

Iron ore briquettes for openhearths are attracting wide interest among steel producers. Tests indicate the briquettes have the density and stability to do a good job in place of lump ores. Cost is reportedly less than that of sintered ore.

Stretch Ore Cargo Hold

A cheaper, more efficient ocean-going ore carrier is in the design stages. The ship's cargo hold stretches 80 pct of length, in place of present 60 pct. Propulsion machinery—free-piston gas turbines—is located between the bottom and cargo hold. The designers claim the added cargo hold improves ability of craft to withstand various stresses and lessens structural requirements.

How to speed up your automatic forging operations ... at no extra cost

To get the continuous, fast operation vital to making the most of your automatic forging production lines, you need uniformity in the steel you use. High speed heat-treating and hardening operations are often interrupted by changes in chemical composition and structure of steel used. Uniformity cuts interruptions for adjustments. It helps you gain the full advantages of automatic operation. And you get the utmost in uniformity—at no extra cost—by using Timken® electric furnace fine alloy steel. It's uniform from bar to bar, heat to heat, order to order.

We take many extra quality-control steps to insure this uniformity. Some of them were "firsts" in the steel industry. For example, a magnetic stirrer for molten steel assures equal distribution of alloys, uniform temperature and working of the slag. And the Timken Company was also first to use a direct-reading spectrometer to insure uniform grain size and chemical composition right to the instant the heat is tapped.

To further assure uniformity, your order of Timken fine alloy steel is handled individually. We target our conditioning procedures to meet your end use requirements. Each bar is stamped to identify the heat it came from. This limits variations within an order as well as from order to order.

So to step up your automatic forging operations—at no extra cost—always specify Timken fine alloy steel. You'll get uniform results, faster, continuous production, time after time. The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable address: "TIMROSCO".

TIMKEN Fine STEEL

A Record Business High Needed To Regain Full Employment

Lag of employment behind production recovery appears to be more than temporary.

Most authorities agree that business will have to top the 1955-56 level for full employment. It means a new trend in future union demands.—By R. D. Raddant.

The new business recovery, unless it soars to new highs, threatens to leave a large group of unemployed in its wake.

The continued lag of employment behind the rate of gains in production is underlined in October employment figures which show an actual decline in manufacturing employment.

Partly Typical — Strikes in the auto industry and other durable goods industries make the October employment picture look worse than it really is. Yet, even with allowances, nothing in recent employment developments indicates a change in the trend.

Effects on Labor—A principal result will be a significant change in future labor demands. Future negotiations will hinge on points that will "cushion" unemployment resulting from technical improvements.

These will include severance pay, shorter work week, more training,

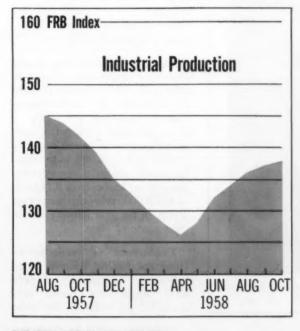
aid in relocating displaced workers, and a stepped up drive to organize white collar workers, to name a few.

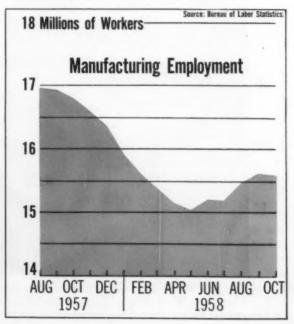
To some extent, the lag is typical of a recovery period. Rehiring is always slower than the rate of recovery in output of any plant or industry. But current trends indicate a more than typical lag.

Situation Aggravated—"The key as to whether we have a new group of unemployed is the extent of the recovery," a Labor Dept. economist told The IRON AGE. "If we come back only to the level of 1955-56, we will still have unemployment."

He added that "there is a longterm tendency to lower employment

Production Comes Back Faster Than Jobs





in some areas of manufacturing, aggravated by the present situation."

A researcher in the United Steelworkers pointed to some preliminary studies of his organization.

Jobs Lost—"We measured February of 1958 against August, 1958. While more capacity was in use, at least 10,000 jobs appear to be unaccounted for. We recognize that in each recession we have had a loss of jobs. It's difficult to tell at this stage, but it looks like something of a gross nature."

There are two apparent reasons behind the speed with which production gained such a jump compared with employment.

The Reasons — Tremendous expenditures for capital equipment are now having their full effect. As operations move up, manufacturers and producers are able to take full advantage of the millions of dollars they spent on new plants and equipment.

And, more important than appears on the surface, is the tremendous drive on the part of management to improve efficiency. The recession provided the opportunity and incentive for streamlining, cutting wasteful practices, and gaining more individual effort from workers.

Some management people believe that better management and worker output may be as significant as new equipment in getting more production from fewer workers.

Steel Situation—Commenting to The IRON AGE on employment in the steel industry, R. Conrad Cooper, executive vice president, personnel service, U. S. Steel Corp., makes this observation:

"When a steel company is operating at 100 pct of capacity, then experiences a decline—but continues installing new and improved equipment and methods during the decline—it's a natural consequence that it will not require as many men when the volume starts up.

Can Go Up—"When it gets back up to the volume of its previous 100 pct, it may still not have as many men, but it can go on from there to higher volume and return to full employment."

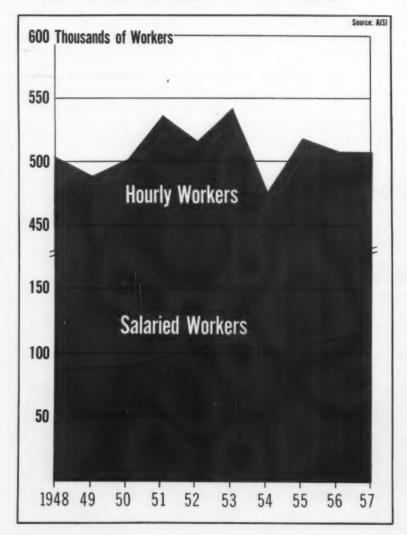
The steel industry is typical of what most mass production industries are experiencing. Neither the steel industry nor the auto industry, for example, is likely to return to employment in the peak year 1951, at least until an expanding economy brings a demand in excess of anything experienced up to now.

The Figures — Looking at the short-term employment picture: In all industry unemployment dropped to 3,805,000 in October, down from 4,111,000 in September.

But the total employed in nonagricultural establishments rose only 100,000 to 51,210,000. In the durable goods industries, employment dropped in October from 8,785,000 to 8,678,000, primarily because of strikes in the auto industry and in other scattered areas.

Employment vs Production — Using the Federal Reserve Board indexes for comparison, durable goods employment gained only about 3.2 pct since the low point

Steel Employment Trend— White Collar Workers on the March



in May, while durable goods production gained 9.9 pct.

All manufacturing production gained about 9 pct from the low point in April, while total manufacturing employment gained 4.5 pct. This indicates that the lag is greater in durable goods industries, which include most of metalworking.

Not Defensive—Few industrialists today take a defensive attitude about their technological improvements and improved production methods. They will argue that the short term is not a fair basis for comparison, and that most measurements of productivity (where output is measured against hours worked, for example) tell only half the story.

Most important, they were forced into heavy capital spending programs by the steadily climbing costs of labor in their efforts to keep costs and prices down.

Are Unions Reconciled? — Generally speaking, unions are committed, or at least reconciled, to technical change. This is reflected in the United Auto Workers so-called productivity factor, under which the union agrees not to oppose technological improvements.

This is not spelled out in exact terms in the steel industry. As one labor relations expert put it:

"The union contends that it is not opposed to progress, but it usually applies that only to capital expenditures and mechanical improvements. The provisions of the Local Working Conditions clause are frequently used to block progress."

Tough at the Bottom — This shows that opposition to technical change is strongest at the local levels, while top union leadership is less opposed to technical progress.

One AFL-CIO official told The IRON AGE:

"The big problem now is to provide workers with some protection against the hazards of technological unemployment. And this would, of course, have the effect of making technical change a little more expensive—and more difficult."

Is Short Week Conceded?

	1955	1965	1970	1975
Average Weekly Hours	40.7	38.7	37.7	36.7
Average Vacation and Holidays (weeks)	2.5	3.0	3.25	3.5
Number of Weeks Worked	49.5	49.0	48.75	48.50
Average Annual Hours	2,015	1,896	1,838	1,780

*Based on an unofficial U. S. government projection

Future Demands—In this direction, severance pay (just won by the auto industry) will become a top demand where it is not now granted.

Unions will strive for financial aid in re-locating displaced workers to jobs within a company, even if it requires a long distance move to another plant.

They will ask for advance notice, already in effect in some industries, of major installations of equipment that will change a plant's job picture. They will demand more company training for the new skills that will be required. They will work hard for wholesale job reclassification.

But more important than these "cushioning" demands are the inevitable drive for a short work week and a stepped-up drive for white collar workers.

Organizing white collar workers is believed by many to be a fight for life on the part of unions as production workers lose importance in industry.

Short Week Inevitable? — Many believe the short work week, with more holidays and longer vacations, is inevitable, although only after bargaining of the toughest kind. One unofficial projection, which is used internally by an important government agency (see table) forecasts average weekly hours at 36.7 in 1975. But others disagree.

"I do not think the short work week is either inevitable or desirable," declares Leland Hazard, vice president and general counsel of Pittsburgh Plate Glass Co. "The strength of our economy is that our people still wish to work. When they do not apply themselves to their jobs, and that is too often true in industry, the cause is not individual laziness, but a misunderstanding of the profit-and-loss system and a lack of confidence in management."

White Collar Trend — Incentive for organization of white collar workers is found in the overall employment trends which point to fewer production workers in relation to white collar workers.

However, there is no guarantee that the uptrend in salaried workers will continue in all industries. Extensive use of more automatic office equipment can reverse the trend.

Whether the concern over the present short-term employment picture is premature is something that only time will tell. A real boom in the 1960's could bring back full employment. However, "pockets" of unemployment persisted in 1955-56.

Reprints of this article are available as long as the supply lasts. You may obtain a copy from Reader Service Dept., The IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.

Missouri Ore Development Gains

Work Pushed on \$35 Million Iron Ore Project

Iron ore development at Pea Ridge, near St. Louis, is a \$35 million project of Bethlehem and St. Joseph Lead.

After mining begins, shipments may go to Bethlehem's Johnstown, Pa., mill or the Chicago district.—By T. M. Rohan.

• Missouri is probably better known for mules, corncob pipes, and an ex-president than it is for iron ore. But things are changing.

The little-noted discovery of high grade ore by St. Joseph Lead Co. five years ago at Pea Ridge, 45 miles southwest of St. Louis, has blossomed into a \$35 million project which is setting ore circles buzzing.

Busy Area—A year ago St. Joe lead and Bethlehem Steel Co. jointly formed Meramec Mining Co. to exploit the property. Now a 22 ft diam shaft, the first of two for men and materials, has been sunk down to 930 ft. It is expected to reach 1000 ft by year's end.

The Missouri Pacific Railroad has run in a \$3 million, 25 mile rail spur. It is said to be the first new common carrier line in the U. S. since almost the turn of the century. A 200 car yard is also being put in. And Union Electric Co. has cut in a 17 mile, \$1.5

million power line for two 138,000 ky circuits.

Pellet Plant Due—Bethlehem will probably build a pelletizing plant to upgrade the 55 pct Fe ore to about 63-65 pct with an expected 6000 tons per day finished pellet capacity. It will probably be a shaft furnace type developed by Bethlehem and used at Lebanon, Pa. and the Grace Mine in eastern Pennsylvania.

At least nine major firms are prospecting in Missouri and have almost tied it up in options. Ironically some originally turned down participation but are now following Bethlehem's lead and scrambling to get back in the game. Several are nonferrous companies seeking to diversify. The area is already one of the world's largest lead producers.

Where Output Will Go—Creating questions in ore circles are the economics of the operation. A good bet is that when full operation is started in 1962 it will go to Bethlehem's Johnstown, Pa. mill. If the Bethlehem - Youngstown merger goes through, it could be shipped to the Chicago district. But shipment there would buck the normal southward flow at a freight penalty, bypass cheap water rates from Lake Superior and ignore Bethlehem's own Erie taconite pellets.

Failing the Youngstown merger, Bethlehem may put up its own Chicago mill and use the ore. Granite City Steel Co. across the Mississippi from St. Louis is a logical customer, but is tied up in other long term contracts. Sheffield Steel at Kansas City is a non-integrated producer. The Missouri Resources and Development Board is thumping the tub for a local steel mill, but not too much interest has been shown so far.

Sound Bet—Industry economists figure the operation is economically

New Missouri Iron Ore Mine



BRAND NEW SPUR: New 25-mile rail connection, costing \$3 million, has been put through to Meramec iron ore mine in Missouri.

sound and the two participants should get their money's worth. At least 100 million tons of reserves are known to exist at Pea Ridge. The ore has fairly high silica content and about 1 pct phosphorus but with fine grinding can be relatively easily upgraded.

"Core drillings from the surface have given us only a partial picture of the size of the ore body," says E. L. Bilheimer, Meramec's general manager. "We feel reasonably certain of having 100 million tons now, but we want to conduct further explorations underground to see if the ore body is even larger."

Ore was first encountered at 1400 ft and it has been drilled to 3000 ft without running out. Water flow at the 930 ft level is slowing up present drilling.

Tub Thumping—No one pretends the Missouri find is another Mesabi, Labrador or Venezuela. But the existence of a major iron ore deposit within the U. S. is a major stride forward.

The State of Missouri is going all out to promote use of the ore. Based on the new find and magnetic ground surveys made in WPA days, it believes a major ore body extends diagonally across the state. The Missouri Div. of Resources and Development is spreading the word. A statewide network of 150 industrial development corporations was instrumental in bringing in 30 manufacturing concerns during the first half of this year. The manufacturers have invested \$10 million and have a \$2.5 million annual payroll of 1000 workers.

Missouri brown ores have a bad name to overcome but the Pea Ridge deposit is an entirely different story. Mining there has traditionally been a shovel and truck operation on surface pockets.

One Other Mine—However, the new Meramec deposit is not surface ore but igneous matter, formed by heat within the earth.

The only other major operation in the state is the Ozark Ore Co. at Iron Mountain operated by the M. A. Hanna Co., Cleveland.

Automatic Coding Can Cut Costs

New approach to computer programming simplifies job of putting problems on machines.

System has worked well in scientific field but progress in commercial area is slower.

New automatic coding systems may cut deeply into the cost of operating electronic computers; they could change the whole philosophy of computer use.

The new systems enable engineers and accountants to instruct computers in terms very close to their own language.

Big Money Saver—Result, say automatic coders, is a big cost slash. Savings up to 40 pct of total installation expense have been claimed for the new methods. Benefit of reduced training for operators and direct use by non-specialists are cited.

As these statements imply, programming has been a large problem. According to one study, about half the cost of computer operation is in the preparation of information.

Computer Helps Itself—With the new systems the computer itself does much of the programming. The operator cranks in a single instruction; the computer will pull out a routine containing possibly five instructions. In this manner IBM says its Fortran system cuts written instructions by 85 pct. Remington Rand says its Math-Matic system reduced programming time on a stress analysis problem from 20 days to 8 hours.

Apart from compressing instructions, automatic coding systems have the advantage of using understandable terms. In its basic calculations, a computer is limited to a few simple functions like adding, subtracting, dividing. Numbers Bypassed—The final breakdown shows up as long columns of numbers, bearing little resemblance to the original problem statement. The new coding systems bypass the numbering step. If an engineer wants to program the sine of an angle, he simply writes the sine of the angle.

Using this kind of talk, an untrained man was able to program differential equations within two weeks at one steel mill.

Commercial Uses—These and other instances are all in the scientific field. In commercial applications of computers, automatic coding has made slower progress. IBM's SOAP system allows the operator to use meaningful symbols instead of straight numbers: it assigns locations in a manner that speeds computing.

But there has been no commercial language that was both complete, compressed, and simplified. Remington Rand feels it has filled this gap with its new Flowmatic system. Flowmatic uses a number of plain English terms like Replace, Insert, Ignore.

Detail Deleted — According to Remington Rand, the new method eliminates big chunks of programming detail; it places the programming function easily within the direct grasp of accounants, production men and other outsiders. Finally, says the company, it provides a set of instructions that can be understood by management.

There will probably be resistance to automatic coding in the commercal field. Even in scientific work, the idea is not completely accepted; a trained and gifted programmer can often work his own combinations and get more out of the machine.

Plants Star in More Movies

Films Play Role in Engineering, Labor Relations

You'll find movie cameras grinding away in the shop to help solve knotty problems for management.

More than 6000 U. S. plants now have one or more cameras at work.—By K. W. Bennett.

■ The white-gloved man poring over the 16mm film strip before a brilliantly-lighted viewer is not a Hollywood movie editor. He's a time study engineer.

By counting the number of film frames and knowing at what speed the film was shot, he can figure out to a fraction of a second how long it takes a worker to perform a series of operations.

It's a sign of the times: The movie

camera has graduated from sales and sales promotion, where it is still most widely used, into the plant.

Broadening Use — Those things were talked about in Chicago by industrial engineers at a meeting of the Industrial Management Society.

But the camera's usefulness in the plant is not limited to industrial relations. It's also finding an important niche in research and customer relations.

Big Business — Eastman Kodak estimates American industry spends \$1.5 million each year for motion picture equipment and film. Conservatively, 6000 to 7000 U. S. plants already have one or more movie cameras in use. They buy more equipment each year. Another

maker of motion picture cameras reports industrial inquiries now run "into the hundreds" each year, and the inquiry rate is rising.

Here are some of the jobs management is doing with movie cameras in the plant:

Job Simplification: The motion picture camera photographs a worker or group of workers in slow motion. A team of industrial engineers examines the film, a frame at a time if necessary, and decides where motion or effort is wasted. The engineers can study the job at leisure, dissect it committee fashion, which they could not do on the plant floor. A plant photographer shoots the film, or the engineer can do the job himself.

Time Study Training: Time study trainees view films of machine operators working at various speeds. The trainees get a visual idea of the different working speeds, learn to select the optimum job rate as determined by experienced time study men who did the original training film.

Labor Negotiations: Industrial engineers in a number of firms are shooting films of operators on one machine working at several different speeds. These are combined into a single film by a professional processing firm. At contract negotiating time, a company projects its film for union bargainers. They have produced some surprisingly painless agreements on what rate represents a fair day's work.

Setting Rates: A growing number of firms are using cameras in the setting of "benchmark" rates. The industrial engineer shoots films of a machine operator working at a variety of speeds. Using the film as a guide, an optimum rate is set.

Ways to Put Movies to Work In the Plant

Product Performance: Film strips of instrument readings of a product under test. These can be shipped along with the product as proof of performance.

Research: Slow motion films of high-speed mechanical movements or chemical reactions in the laboratory or engineering departments.

Industrial Engineering: Random work sampling, using remote control camera. Industrial engineers can then study the film at their leisure.

Traffic Control: Stop motion photography of plant areas where traffic control is a problem, including elevators, lift truck corridors, loading docks, plant entrances, plant walkways.

Worker Safety: Re-enactment of accidents which have happened in the plant. Brings safety message closer to home.

Employee Relations: Indoctrination film for new employees cuts manhour costs in personnel department.

How to Beat a Skilled Worker Shortage

Drafting trainees were scarce in the Philadelphia area three years ago. Industrial drafting supervisors got together, decided elaborate recruiting programs would not help. They combined forces with educators and government labor experts to create the Delaware Valley Design and Drafting Council.

Its aim: Find ways to stir up interest in drafting as a career. The Council's program is still expanding, but here are some of its methods:

Updating Teachers:

Seminars are held for high school and vocational drafting teachers. Industrial experts conduct lectures, try to bring the teachers up-to-date on new drafting methods.

Providing Speakers:

Council members address high school classes, PTA meetings, civic

and business clubs on the importance of drafting.

Surveying Job Needs:

Industries are being surveyed on their drafting manpower needs, present and future.

Organizing Training:

Work is underway on a handbook to aid companies in setting-up apprentice programs.

Shortcuts Reduce Drafting Costs

Increasing output while holding down costs is a challenge for drafting supervisors.

Some ideas: Try drafting timesavers. Make better use of manpower.—By P. J. Cathey.

• How can a drafting department turn out better work at less cost with today's tight production schedules?

This is the problem the Design and Drafting Council of Delaware Valley tackled last week at its third annual Workshop in Philadelphia. Some of the suggestions: Take full advantage of drafting shortcuts. Make better use of drafting manpower,

Cut and Splice—High on the list of drafting shortcuts is the use of photography in design work. Horace P. Maguigan of DuPont's reproduction staff showed Council members how photo tracings can cut drafting time.

An example: Plans for a power plant with three boilers must be enlarged to include a fourth identical boiler. Hours of drawing are eliminated by photographing the existing drawing. Then one of the boiler sections is cut out, spliced into another photo print, and the drawing is ready for use.

In the same way camera work reduces the amount of pencil work needed on structural steel blue-prints. Where upper sections of framework are mere duplicates of lower sections the drafting room need only draw the lower sections. These can then be photographed and as many copies as needed can be made.

Re-Vamp the Old—By using photography, Mr. Maguigan pointed out, old drawings can be changed. Incorrect matter can be touched out on the photo negative and new detail added later.

On some construction jobs, Du-Pont uses photographs of scale models instead of detailed drawings. The models are photographed and dimensions, notes, and lettering are added right on the photo tracing. With their 3-dimensional effect these prints are welcomed by constructors, save designing time, and reduce the number of elevation drawings needed.

When plants must be remodeled the changes can be inked in on photographs of the present installation

Cost Savings — DuPont found photo tracings cut design manhours on one job from 180 to 75. Cost savings on some piping jobs were 20 to 35 pct. But Mr. Maguigan has a caution: Photographic drafting is not a designer's panacea. Its benefits depend on the job involved. Sometimes conventional drafting approaches are better.

Using Manpower — In another Workshop session a panel reviewed management's role in developing drafting manpower. Here are its conclusions on:

Employee Problems: Personal worries may destroy a new man's efficiency. Letting him talk them out may help. But it's better to leave counseling to the experts.

Screening New Employees: There's no sure way to size up a man before hiring him. Best advice: Work-test his listed experience as soon and as completely as you can.

Scrap Men Fret Over Hot Metal

Outlook Is for More Blast Furnace Competition

For nearly two years, steel mills have been using more pig iron than scrap.

The trend reflects increasing blast furnace efficiency, use of high grade ores, and sintering.

—By R. O. Schulin.

• How deep will hot metal cut into the scrap market?

The question is of growing concern to scrap men who for two years have been watching the balance tip in favor of pig iron over scrap in steelmaking operations.

If the hot metal trend continues, the long-term outlook for the scrap industry is far from rosy. It would mean diminishing demand for scrap, a stabilizing of scrap prices at generally lower levels, and a gradual change in the make-up of the industry.

Mill Efficiency Improves — The trend may already have started. While the steel operating rate has

been moving upward in recent months—usually a hopeful sign to the scrap industry—scrap purchases have failed to keep pace.

In 1957, mills used 2.5 million tons more pig iron in their operations than scrap (see table). In the first nine months of 1958, pig iron had only a 7000-ton edge. This was because many mills shut down blast furnaces last summer after the operating rate fell below 50 pct.

Technical improvements in steelmaking are affecting demand for scrap. First of all, high grade imported ore is boosting blast furnace yield. And the growing number of sintering plants is further increasing blast furnace output. With oxygen processes and other new production short cuts, mills are getting more hot metal out of heats than ever before.

Dumping Reported — Consequently, mill scrap inventories are high—roughly two million tons more than in the same period 1954, before the last steel boom got un-

derway. The prolonged drought of mill purchases has left the scrap industry overstocked, overexpanded, and short of funds.

In New York State, metalworking firms are reported dumping machine shop turnings—the lowest grade blast furnace scrap—for lack of a market.

Market Changes Coming—Veteran scrap men foresee a radical change in the organization of the scrap industry in the next several years. Here are some of their predictions:

Many of the marginal dealers and those in remote areas are expected to go out of business.

The trend will be toward a few large scrap processors in key districts who will be supplied by many small yards who will handle only unprepared scrap.

Highly cyclical peaks and dips in prices will no longer be the case. Scrap prices can be expected to taper off to a level near the mill cost of hot metal.

Signposts—In the East, for instance, one major mill is reported to be producing pig iron at a cost of \$33 a ton. The price of No. 1 heavy melting scrap in the district is \$40 a ton. Understandably, this mill has bought no dealer scrap for over 14 months. There are similar cases in other parts of the country.

Adding to scrap men's woes is the virtual disappearance of the export scrap market, which for several years had been a prop under prices in port districts, and inland areas as well.

Fighting Back—All this adds up to a gloomy outlook for the industry. But scrap men aren't taking it lying down. To counter the hot metal trend, the Institute of Scrap Iron and Steel has begun a campaign to sell the steel industry, the

Hot Metal Gains On Scrap

Consumption—gross tons (000)

	Scrap	Pig Iron	Ratio
1948-52 (overe	66,791	62,276	51.7/48.3
1953	77,131	74,706	50.8/49.2
1954	61,354	58,662	51.1/48.9
1955	81,375	77,216	50.7/49.3
1956	71,902	66,968	52.0/48.0
1957	65,665	68,173	48.5/51.5
1958 (first 9 month)	35,372	35,379	50.0/50.0
Source: Bureau of I	Mines		

public, and the government on the importance of the scrap industry.

"Greater reliance put on foreign ore in peacetime means less reliance is being placed on domestic iron and steel scrap with consequent injury to the scrap industry and dislocation of the scrap collecting operations," says ISIS.

"There is danger," the Institute warns, "that in an emergency, supplies of foreign ores can be cut off and there will be an immediate call on a weakened steel scrap industry. . . ."

Stockpile Talk—There is also a move underfoot to create a government-supported stockpile of ingots made from steel scrap. But American Iron and Steel Institute frowns on such a plan with its implied control over the industry's operations. Furthermore, with a stockpile overhanging the market, there is always the possibility that the stockpile would be dumped on the market at some future date.

There is one encouraging possibility in the long-term outlook for the scrap industry: Low scrap prices would encourage the growth of small, regional "cold metal" mills—electric furnace operations whose entire charge would be made up of scrap.

Iron Ore Stocks High

Iron ore docks of steel mills are at one of their highest points in years in the wake of the recession.

The Lake Superior district is finishing its slowest year since pre-World War II. Foreign ores too, are off, but not as drastically. Percentagewise, they continue to score gains.

Plenty—Stocks of ore on hand at U. S. docks on Sept. 30 were 71.2 million tons, according to the American Iron Ore Assn., Cleveland. This is over five million tons more than at same time last year. At the current consumption rate of about eight million tons per month, there is enough for about eight months' operations. Only 178 blast furnaces out of 276 in the U. S. and Canada are operating.

1959 Outlook for Construction Contracts

Estimated volume—millions of dollars

	1958	1959	Pct Change
Nonresidential	11,070	11,630	+5
Residential	14,100	14,250	+1
Total Building	25,170	25,880	+3
Public Works and Utilities	9,500	9,690	+2
Total Construction	34,670	35,570	+3

Source: F. W. Dodge Corp.

Building Peak Coming

 Construction will hit a new peak in 1959, according to F. W. Dodge Corp. New records will be set both in contracts awarded and work put in place.

Dodge forecasts that next year's contracts for all types of buildings will total \$35.6 billion, a 3 pct increase over this year's estimated \$34.7 billion. Biggest boost will come from private projects, in contrast with 1958, when government construction sparked recovery.

New Plants—Largest percentage increase, 14 pct, is expected to come in contracts for new factory buildings (measured in floor area). But the 14 pct rise may easily be too conservative; the report notes.

Housing, both public and private, is expected to continue at this year's level of 1,160,000 starts. The Dodge report notes the adverse influence of rising interest rates on Veterans Administration and Federal Housing Administration

programs, and indicates the possibility of offsetting actions by Congress and the Administration in 1959.

Small Unit Trend—Because of rising costs, dollar volume of 1959 housing contracts is estimated at 1 pct above the 1958 level. But physical volume as measured in floor area is expected to decline. Total dollar volume of residential contracts in 1959 is estimated at \$14.3 billion.

Nonresidential contracts in 1959 are estimated at \$11.6 billion, up 5 pct from 1958. Floor area is expected to increase 4 pct above this year. Larger individual nonresidential categories break down this way:

Manufacturing up 14 pct, hospitals up 5 pct, religious up 4 pct, commercial up 3 pct, schools up 2 pct, social and recreational down 5 pct, and public buildings down 9 pct.

Will Oil Country Goods Tighten?

Market Is Easy, But There Are Signs in the Air

More drilling starts in 1959 are predicted.

Drillers' steel inventories are low, but mills have plenty of open capacity.

The big question is how fast will increase in demand build up.—By K. W. Bennett.

• Will oil country goods be the steel industry's tightest product in first quarter?

Standard Oil Economist Austin Cadle reports: "The year 1959 should witness an increase in domestic (petroleum product) demands of 4 pct or better."

Bigger Spender-A recent study

suggests the oil industry will spend \$5.1 billion in 1959 for capital equipment, compared with \$4.9 billion in 1958. The biggest increase, roughly 11 pct of the gain, will go into drilling.

It's estimated that U. S. oil producers will sink 47,000 wells in 1958, a 12 pct drop from the 53,800 wells completed in 1957. The forecast for 1959 is 54,000 wells. This would be the third biggest year in U. S. oil history.

If the Standard Oil analysis is correct, U. S. oil producers will need a minimum of 2.5 million tons of casing and tubing during 1959. They might buy as much as 3 million tons. This would be substantially over the 1.2 million tons

of oil country goods mills expect to ship in 1958.

Razor's Edge—Oil country goods buyers are walking a thin line between scarcity and plenty. A steel buyer for a large petroleum company told The IRON AGE at last week's American Petroleum Institute meeting, "Our buying will probably run 10 times higher in 1959 than it did in 1958. And I'm speaking only of casing and tubing. We've done little drilling this year, but our inventories are down to 60 days even at the present drilling rate."

A spokesman for a large oil country goods supply house adds, "In my opinion, casing and tubing inventories are dangerously low. For the past 60 days we've been shipping seamless tube direct to the well-site for immediate use, but we are still not boosting our purchases of seamless tube from the mills."

Buying Picture — Faced with growing drilling demands, and oil country goods inventories that are at a record low in relation to drilling, why aren't casing and tubing users buying more?

One reason: Tube mills continue to offer delivery out of stock. A buyer can get seamless tube in as little as two weeks if he shops a little.

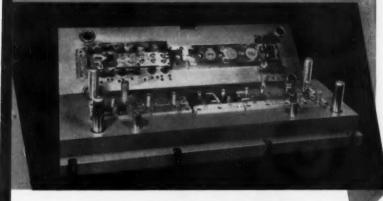
Another: Mills are building stocks of tube and casing at down-river depots. Buyers figure they can get quick delivery from these stocks. What many do not yet realize is that much of this steel is already spoken for.

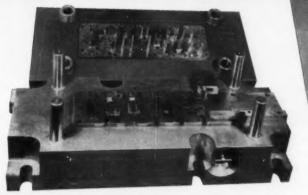
A number of major buyers are waiting for their new purchasing appropriations. The budget will come down from the front office in late December. The minute that it does, they'll begin buying heavily.

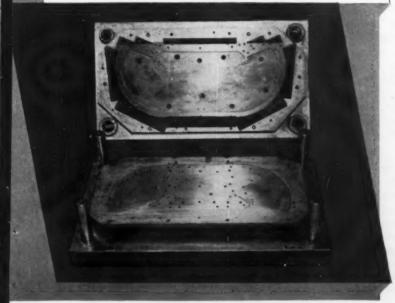


MORE STARTS: Oil companies plan more wells in 1959. Their stocks of casing and tubing are low. This could mean a tight market is ahead.

when all depends on performance







specify with safety these Vanadium-Alloys

le Steels

FOR COLD WORK

OHIO DIE A high carbon, high chromium type of steel which hardens in air to high hardness with almost no movement. Possesses wear resistance about eight times that of 1% carbon tool steel. Your best choice for long runs between grinds. Available in regular or FM (Free Machining) type.

AIR HARD Air hardening die steel having good machinability and exceptionally high strength and toughness. Movement in hardening about one-third to one-fifth that of oil hardening steels. Used for all types of cold work dies. Safe to harden, safe to grind. Available in regular or FM (Free Machining) types; also in precision ground flats and squares.

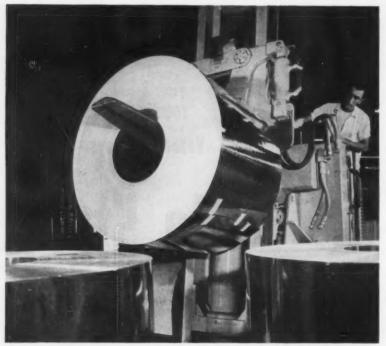
COLONIAL No. 6 Manganese oil hardening die steel specially annealed by us to provide easy machining. The general purpose die steel for all tool room requirements. Hardens with a minimum of movement because of the very low quenching temperature required. Available in all sizes and shapes including drill rod and precision ground flats and squares.

For machinability, hardenability, wearability and dimensional stability, Vanadium-Alloys Die Steels for Cold Work are unsurpassed in the field. These steels take the gamble out of die steel specifications -let you concentrate safely on production! Our assistance in matching the right grade to the job is yours to command, and you can depend upon it. Write for technical Data Sheets.

Vanadium-Alloys Steel Company LATROBE, PENNSYLVANIA

DIVISIONS: Anchor Drawn Steel Co. • Colonial Steel Co. • Metal Forming Corporation • Pittsburgh Tool Steel Wire Co. SUBSIDIARIES: Vanadium-Alloys Steel Canada Limited . Vanadium-Alloys Steel Societa Italiana Per Azioni . EUROPEAN ASSOCIATES: Societe Commentryenne Des Aciers Fins Vanadium-Alloys (France) · Nazionale Cogne Societa Italiana (Italy)

First Step to a Six-Pack



COIL FOR CANS: This 17,000 lb tinplate coil will be fabricated into about 173,000 beer cans at American Can Co.'s new coil processing plant at Hillside, N. J. The \$32 million facility is the eighth coil processing center put in operation by Canco in the last 18 months.

IRON AGE Editor Warns of Price Hikes

The current stability of industrial prices may be about ready to evaporate. This is what Tom Campbell, The IRON AGE editor in chief, told the Chicago Assn. of Purchasing Agents.

The election outcome, the belligerence of labor, the national deficit, and the upward trend in the business cycle will conspire to raise prices after a temporary hesitation, he said.

Continue Up — Campbell stated flatly that the current business improvement would continue through 1959 and blossom into a boom by 1960. "There is evidence that the going may be a little slower over the next six months compared with the fast pick up from the April bottom. If we assume that it will be a slow but steady improvement into next spring," he continued, "we will

run into a strong probability of a steel and aluminum strike in the summer of T959 with all its dislocations in inventory and buying patterns."

He told the PA's that many of their associates were quietly letting their steel, aluminum, copper and machinery dealers know pretty firmly what they expect to do in the first quarter of next year.

More Spending—On the political scene, Mr. Campbell interpreted the Democratic landslide in the House and Senate to mean more spending next year. "More spending," he said, "means there is little chance to reduce what now looks like a \$12 billion deficit for this fiscal year and a \$4 or \$6 billion deficit for the fiscal year starting next July."

Small Arms Squeeze

The government is investigating complaints of domestic small arms makers that sales of surplus military guns are seriously damaging their markets.

The U. S. small arms industry is urging the government to restrict its sales of surplus arms to consumers, and to curb shipments from other countries.

Industry spokesmen recently warned Commerce Department officials that these surplus arms were endangering their ability to function in case of national emergency.

Curb Imports—They particularly ask for tight curbs on shipments to the U. S. of old arms, including rifles, shipped to other countries during World War II. The rifles, along with outmoded rifles of foreign make, are being shipped to this country for sale to hunters, they say.

A special committee has been set up in the Business and Defense Services Administration to study the problem.

Boating Sales Up

There was no recession for the outboard boating industry this year, says the Kickhaefer Corp., Fond du Lac, Wis., makers of mercury outboard motors.

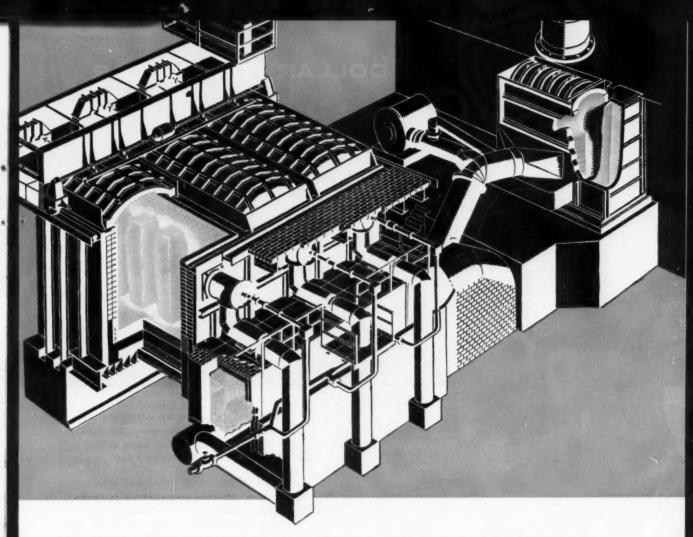
They figure the entire industry—motors, boats and trailers—will gross about \$446 million in 1958. This would be an increase of 14 pct over 1957.

New High — Outboard motor sales alone are expected to top \$250 million for the first time. Although dollar sales are up, the number of engines sold is likely to be down by about 30,000.

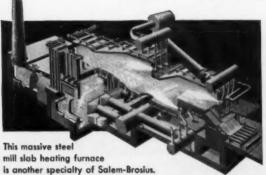
Mobilization Meeting

Businessmen, government employees, and military reservists are signing up for a Washington conference on resources mobilization.

This meeting is one of the series of national defense resources conferences conducted by the Industrial College of the Armed Forces. Anticipated for the Washington sessions, Dec. 1 through Dec. 12, is attendance by at least 650 civilians and some 350 reservists.



Ingot heating is fast and uniform in Salem-Brosius soaking pits



This battery of Salem-Brosius rectangular soaking pits currently is in round-the-clock operation heating ingots in a large steel mill. Of this installation, a top operating official said: "These pits are heating more steel ingots ready for rolling with less fuel consumption, less maintenance costs, and better temperature uniformity than any other type of pit in our plant."

Reports like this are typical, not only about these rectangular soaking pits, but all Salem-Brosius furnaces. Salem-Brosius engineers possess an enviable record for designing furnaces that produce maximum, high-quality output at minimum operating cost. If your plans call for soaking pits or any heating or heat-treating furnaces, send us an inquiry. There will be no obligation.

SALEM-BROSIUS, INC.

CARNEGIE, PENNSYLVANIA

In Canada: Salem Engineering Limited • 1525 Bloor Street West, Toronto 9, Ontario

SPECIAL MECHANICAL EQUIPMENT . INDUSTRIAL HEATING FURNACES . MATERIALS HANDLING EQUIPMENT



EATURING NIAGARA'S FAMED MULTI-POINT MECHANICAL SLEEVE CLUTCH

Picks up load on 14 engaging jaws. Applies driving force concentrically without keys or pins. Assures instant engagement and maximum productive strakes per minute. Needs no air nor electricity. Practically no maintenance. Greater safety: Simplified controls, fewer parts to wear out. Yes, if permits, inching, too.

Here's a workhorse that's known for setting the pace on the most demanding jobs...jobs where the clutch is engaged and disengaged at every press stroke... jobs that call for operation three shifts a day, day in and day out.

Built and backed by a company which produces industry's greatest variety of inclinables*, Series A Presses have amassed an unusual success record in thousands of applications. To be specific, let's take a close look at a Series A user:

GET THE FULL REPORT

28 OBI'S SINGLE STROKED 707,140,000 TIMES WITHOUT ONE CENT SPENT ON CLUTCH ENGAGING SURFACES

NIAGARA

Dr. Schrade F. Radtke

Research Comes to the Rescue

The lead and zinc industries chose Dr. Radtke to direct a long-range research program.

From this start, many new applications are foreseen for the two metals.

• The lead and zinc industries, long out-glamored by the new bright metals, are out to recapture the attention that once was theirs.

Working day and night toward this end is Dr. Schrade F. Radtke, director of research for a joint program sponsored by the American Zinc Institute and the Lead Industries Assn.

A Flying Start—At last count, Dr. Radtke had nine zinc research projects in progress and at least 16 more under consideration. With lead, he was mulling over about 15 new applications.

Dr. Radtke, a Massachusetts Institute of Technology alumnus, is confident that his long-range rejuvenation program will be a huge success. The lead and zinc industries have done a good job on process research, he believes, but there is a lot to be done in developing new products.

Applied or Basic? — He confesses that a sense of urgency in the program is restrained somewhat by his researchers' natural inclination to "make haste slowly." One problem is that he must resolve the relative values of product research, which may pay off comparatively soon, and basic research which may not prove profitable for years, if at all. He must see that both are done in proper proportion.

As any research director will tell



DR. SCHRADE RADTKE: A sense of urgency in his job.

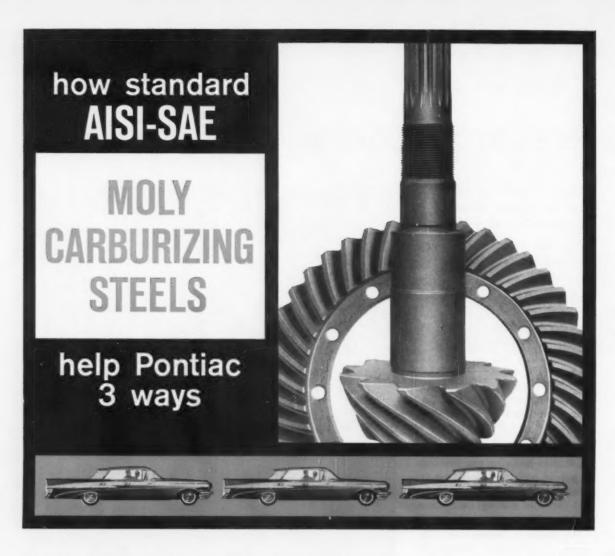
you, there is a financial limit to research, and it's usually low. In Dr. Radtke's case, no specific budget has been set aside for his program. Each project will be assigned an amount depending on the appraisal of a technical steering committee.

Problem of Choice — At this point, there has been no shortage of suggestions — particularly from consumers and potential consumers. Most are technically sound. But many aren't practical, says Dr. Radtke. He has to be a realist in appraising each, a pessimist in turning down those with least promise, and an optimist in extolling the

virtues of good suggestions to the pursestring committee.

After he has decided what to research, he must determine where it shall be done. In this respect, the lead-zinc program is international in scope. Dr. Radtke plans to contract for the necessary work at any institution in the world that is best qualified to do the particular job.

All along the line, and particularly as a project nears completion, he must work closely with a group of marketing men from industry to find ways of getting the greatest benefit from the work.



After extensive testing, Pontiac adopted the 4520 type for ring gears and pinions in its 1956 model and has used this grade ever since.

IN PURCHASING

AISI-SAE 4520 is more economical than the previously used carburizing steel with lower molybdenum content.

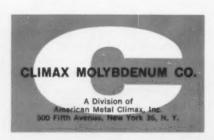
IN PRODUCTION

AISI-SAE 4520 has machinability commensurate with the previously used carburizing steel and can be annealed with a simpler practice.

IN QUALITY

AISI-SAE 4520 gives a higher case hardness after carburizing and quenching than the previously used carburizing steel.

AISI-SAE 4520 is now a standard grade. Ask your regular steel supplier about it.



Plus Factors Outweigh the If's

October won't look good in the record books. Strikes in many areas upset the recovery trend.

The interruption in the uptrend raised some questions, but positive factors point to a continued rise in production.

There's no question about it. October didn't show up too well in the record books. What's more, the first weeks in November didn't show much improvement.

Nevertheless, there is little tendency to view with alarm. The October-November letdown is directly attributable to a series of strikes, mostly in the durable goods industries, that had nothing to do with demand for goods and services.

Hard Hit — Industries hit included automotive (principally General Motors), fabricated metals, machinery, electrical machinery, and glass. The result was a disappointing drop of almost 200,000 in manufacturing employment in October.

They not only hit employment, but the result is expected to show up in production totals too.

Resume Speed—The recovery is expected to resume its upward trend and continue through the fourth quarter. At this point, there is nothing to indicate any dropoff after the turn of the year.

It's true that there is a big series of "if's." Here are a few:

If new home building doesn't fall off;

If the new cars really sell;

If capital expenditures hold their own or pick up;

If consumer confidence holds up. You can't counter most of these "if's" with clear sets of figures. The auto industry has been hit by strikes and walkouts to the extent that dealers haven't really tested the market.

Plenty of Credit—But you do know that instalment credit has dropped to a point where there is plenty of room to finance a really good year for cars and other heavy consumer durables. And there are enough cars on the road, 1955's and older, to provide a big incentive for mass trading.

Home building is a question, but not one of demand. There is some speculation that tighter credit will snuff out the new housing boom, but many authorities in the mortgage field don't think it will. Capital Spending—Probably the big factor in writing off the "if's" is the refusal of capital spending to dry up and leave a parched economy. Major industries indicate their new plant and equipment appropriations hit bottom this year. Now they are making sounds about new programs, not as large as in the 1955-56-57 period, but not too small either.

It won't be so much for expansion, but to replace obsolete equipment, to tool up for new products, and to get in shape for cost and efficiency improvements that are demanded. Major expansions will be held off until the 1960's.

Behind Continued Labor Unrest

No Easy Way Out—Don't expect an early or easy end to the series of labor troubles that is cutting across industry.

It's a product of the labor relations climate, with management not only getting tough on wages, but cracking down on local abuses, work standards, and asserting its right to manage.

Labor Problems—Labor leaders, with their eyes on the uptrend in business aren't turning out to be pushovers and are talking a little tougher than they were a month or two ago. It adds up to a stormy labor period.

Some top people in labor relations report they are having more trouble at the local level than with the labor leaders. Like the paralyzing GM strikes, strife lingered on in individual plants long after the basic pattern was set.

Strikes probably won't be broad enough to hamper the total recovery, just irritate it a little, something like the October situation. But they are likely to keep the labor situation unsettled for most of the winter. It won't make it any easier next spring when the steel showdown approaches.

Freight Carloadings Drop in November

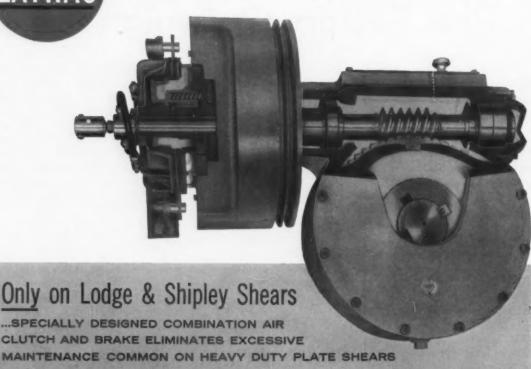
You can see the effect of the October letdown in the rate of freight carloadings in recent weeks.

After significant improvement through the summer and fall, loadings have been in a moderate decline for about a month.

Carloadings for the week ending November 8 were off 16,391 from the previous week and were still below the year-ago level.

Most of the decline is in the miscellaneous freight class, and another big decline in forest products. Coal and coke continue on the uptrend.

on the machine ... not on the invoice!



The "standard extras" you find on Lodge & Shipley Shears, although not reflected in the price, are important in time-saving, effortless operation, accuracy and low-cost service.

> THE COMBINATION AIR CLUTCH AND BRAKE, for example . . . its single unit design positively eliminates overlap between clutch and brake. Disctype construction is self-adjusting for fast, smooth starting and safe, positive stopping. The clutch provides automatic overload safety; the brake applies automatically in the event of electrical or air supply failure.

> NO OTHER SHEAR, EVEN AT EXTRA COST, can offer the exclusive combination of features found, for instance, on the 1/2" Lodge & Shipley Shear:

- · 2-stage Hydraulic Holddown System · Remote-operating Foot Control Motorized Front-Operated Back Gauge
 One-piece Shaft with Integral Eccentrics • Ball Transfer Table • Blade Clearance Indicators • Air Counterbalances . Air-cushioned Back Gauge . Blade Changing Jigs
- Fast, One-man Upper Blade Adjustment Independent Holddown Fingers
- · Quad-life Worm Gear.

Find out how much more you get . . . WITHOUT EXTRA COST . . . on a Lodge & Shipley Shear. For details, see Sweet's Machine Tool File or request Bulletin No. PS-15 from: The Lodge & Shipley Co., 3073 Colerain Ave., Cincinnati 25, Ohio.



Capacities to 1/2" x 12"

odge & Shipley Your LODGE-ical Choice!

72

Checker Tools Up for New Car

Taxi Builder Will Unveil Family Sedan in January

Checker Motors is out to sell the public driving comfort and economy at a low price.

Hopes are backed by market study showing need for a 'practical' car.—By H. R. Neal.

■ If all goes well, there will be another new automobile to identify in the nation's driveways about mid-January. And like other recent entries into the competition to "give the public what it wants," this latest gamble will steer clear of competition with the slick styling tricks of the auto industry's Big Three.

Morris Markin, president of Checker Motors Corp., Kalamazoo, Mich., taxicab manufacturer, announces his company will introduce "an all-new family-type" automobile called the Superba shortly after the first of next year.

There's a Need — Actually Checker tipped its hand on plans to enter the passenger car business over a year ago when it announced it would invest \$5 million in a tooling and expansion program. Introduction was scheduled for this past spring. But lagging auto sales and difficulty in obtaining all of the needed dies are said to be the reason for delaying the program.

Mr. Markin says market research shows there is a "substantial market" for just such a car—one providing maximum comfort, durability and economy."

Comfort Plus Economy — "Our studies show there are many thousands of car owners who are seeking a practical automobile with greater riding comfort, more interior seating space, and shorter length than are now available in the conventional passenger car," he said.

"These motorists value comfort and economy and want an automobile built not only for safety, easy handling and parking and low maintenance costs, but specifically designed for the comfortable accommodation for a full complement of passengers by providing ample leg and head room and effortless entry and exit."

Family Resemblance—Exact styling and engineering details have not been released. However, previously the company indicated it will resemble present taxicab models in general appearance. Distinctive

grille and bright metal trim will distinguish it from its commercial counterpart, and interiors will offer more consumer appeal.

Wheelbase for the car is a moderately long 120-in., up to two in. longer than Ford, Chevrolet and Plymouth. But overall length is just 200 in., some 8 to 10 in. shorter than F-C-P, making it the shortest big car to be offered. Height will also be several inches more than most cars now being offered.

Low Price Range—There will be a number of engineering differences from Checker's taxicabs. It will have a larger six-cylinder engine

Small Cars Move Ahead

Detroit Can't Ignore It—Sales of pesky little imports continue to plague Big Three automakers and push them closer to the day they will have to publicly announce intentions to produce a smaller domestic auto.

At one time, automakers indicated foreign cars, mostly small economy types, would have to capture more than 5 pct of total U. S. sales before they became a threat. Latest registration figures, for September, show 36,417 foreign cars were sold in that month—for a jumbo-size 11.5 pct slice of the market.

Then Include Rambler—Adding in America's answer to the "small car threat," American Motors Rambler series, the figures become even more impressive. Rambler's share of the business has risen to 3.5 pct of all sales in the U. S., also double its year ago share of 1.7 pct.

How They Rank—Volkeswagen, import sales leader, chalked up 5482 registrations in September—enough to earn it 11th place in sales for the month. Renault, with 5038 sales, was close behind for 12th place. This drops Chrysler to 13th place, compared to its 11th place ranking among domestic cars.

The English Ford took 14th place with 3424 sales, nosing out De Soto. Two other foreign makes rounding out the top five places among foreign cars. Vauxhall (2206) and Fiat (2094), place higher than Edsel, Lincoln, Imperial and Packard among the U. S.-built cars.

FOR Accurate Parts ZINC DIE CASTINGS ARE BEST

20 YEARS OF SUCCESSFUL EXPERIENCE with ZAMAK alloy die castings have led Neptune Meter Company engineers to use 40 or more such parts in some models of their AUTO-STOP PRINT-O-METER REGISTER.

This direct-reading register for liquid meters is a perfect example of complexity made simple by the use of pressure-cast zinc alloy. Notice the many as-cast features in these parts: bosses, studs, cored holes, lettering, strengthening ribs and even inserts of other materials cast in place. These parts are ready for assembly with a minimum of machining, and at a saving of production costs.

These assembly advantages resulted from intelligent design. They can be adapted for your products as well—along with the natural durability and corrosion resistance of HORSE HEAD® ZAMAK die casting alloys.

HORSE HEAD® SPECIAL ZINC AND HORSE HEAD ZAMAK ARE PRODUCED BY

THE NEW JERSEY ZINC COMPANY

DEVELOPERS OF THE ONLY STANDARD ZINC DIE CASTING ALLOYS IN USE TODAY

160 Front Street • New York 38, N. Y.



Automotive Production

WEEK ENDING	CARS	TRUCKS
Nov. 15, 1958	120,920	23,250
Nov. 8, 1958	125,279	24,838
Nov. 16, 1957	141,904	22,666
Nov. 9, 1957	136,742	22,643
TO DATE 1958	3,387,436	726,896
TO DATE 1957	5,313,934	954,106

*Preliminary Source: Ward's Reports

than the present 90 hp powerplant. Automatic transmission, power steering and power brakes will be standard, according to Mr. Markin's previous statements. He also says the price is still expected to be around \$2,500 plus optional equipment.

First outside showing of the car will be next month when "selected quality dealers" and automotive writers will be invited to Checker's Kalamazoo assembly plant. A production line is expected to be in operation by then.

One Hundred a Day—No production schedules are set, but Mr. Markin says the company is set up to produce as many as 100 Superbas daily and can increase that schedule. Currently, Checker is producing 70 to 80 cabs per week and through the first 10 months of this year has built 2395 taxis, compared with 3413 for the same 1957 period.

In his earlier announcement, Mr. Markin indicated sales and service would probably be handled through established Checker distribution offices which now serve cab companies. This would reduce substantial financial outlays usually required for establishing a dealer organization.

Kefauver Aims For GM Anti-Trust Suit

"Break up General Motors" was the gist of a report issued by the Kefauver committee which investigated the auto industry's pricing practices last winter.

The committee asked the Department of Justice to investigate "the pattern of concentration in the auto industry" to determine whether court action is necessary to break up GM. The request is a customary first step in starting an antitrust suit.

The Leader—The majority report took all automakers to task, but concentrated its fire on the giant in the industry. It renewed charges GM controls the entire U. S. auto industry, claiming prices of GM's products are set by management rather than the law of supply and demand. Other automakers, it continued, invariably follow GM's lead.

GM chairman Frederic G. Donner immediately lashed back, accusing the committee of overlooking principal aims in favor of "speculative, conjectural and partisan opinions."

Dirksen Dissents—Mr. Donner commented: "It is unfortunate that the subcommittee's original objective of coming to grips with the problem of inflation appears to have been sidetracked."

A dissenting opinion was filed by Sen. Everett Dirksen (R. Ill.). The dissent denied the industry has created artificially high prices and accused the Democrats on the committee of harrassing the auto industry and hunting headlines.

Plymouth Soft Tops

Plymouth says it has doubled its production allotment of convertibles in the last four years. It expects a further increase in 1959, with two series for the first time—

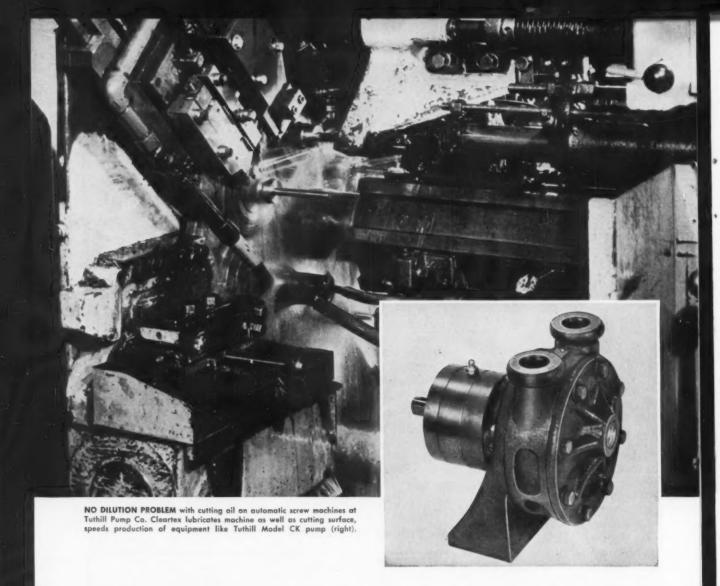
a Belvedere and a Sport Fury.

S-P Unveils Taxi

Studebaker - Packard Corp. has unveiled its 1959 model taxi, which the company says is designed for economy of operation and low maintenance cost. Overall length is 179 inches, just four inches longer than S-P's new Lark passenger cars, but the company says it is roomier than last year's model, the first taxicab put out by S-P.

The Bull of the Woods





No cutting oil dilution for 10 years in Tuthill's automatics—thanks to Cleartex

Texaco Cleartex is the dual-purpose oil that eliminates cutting oil dilution on automatic screw machines. Ever since Tuthill Pump Co., Chicago, started using Cleartex in 1948, they have been able to report complete elimination of the dilution problem, as well as increased production and longer tool life between regrinds.

Cleartex solved Tuthill's cutting oil problem by combining in one product a fine cutting oil *and* a premium lubricant. The combination of high stability, rust protection and relatively high extreme-pressure properties makes Cleartex a top performer in both categories.

There is a complete line of Texaco Cutting, Grinding and Soluble Oils. A Texaco Lubrication Engineer will

gladly help you select the proper ones for your operation. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.



LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)

Ike Will Battle for Sales Tax

But Leaders of Both Political Parties Are Opposed

Everyone agrees something must be done to improve federal tax collections.

But Ike's sales tax plan is openly opposed by both parties for some very definite reasons.

—By G. H. Baker.

■ Talk of a national sales tax is in the news again.

The Eisenhower Administration is preparing to fight hard for sales tax bills in the new Congress. But top leaders in both parties are cool to the idea. A national sales tax, paid by either manufacturer or consumers is unlikely in 1959.

A Problem—Every congressman concedes the government's revenue problems are becoming worse, and that "something will have to be done" to beef up sagging tax collections

A national sales tax could produce enough revenue to permit cancelling all existing federal excises—plus substantial reductions in the tax on individual and corporation income. But a sales tax creates a proportionately heavier burden on the poor than on the rich.

Politic Attitude—For this reason, both political parties are wary of any talk of a sales tax. They figure it's politically smart to denounce sales tax proposals as "soak the poor" plans.

Vice President Nixon recently came out for a national sales tax, and was quickly supported in this view by Sinclair Weeks, who has since resigned as Ike's Secretary of Commerce.

Mr. Nixon spoke of a possible 1½ pct tax on all sales, except food, at the manufacturing level. But now

it appears this would be far too low. The National Retail Merchants Association calculates that cancellation of all federal excises would require a sales tax of at least 10 pct.

Effects — A manufacturer's tax would send the average retailer's costs spinning upward. It would mean immediate increases in rent, insurance, inventory taxes, wages and all sales expenses.

President Has a New Foreign Aid Program

President Eisenhower is proposing a new-style, cooperative foreign aid program. From all indications, however, it will not replace our current \$3.5 billion-a-year subsidy to specific foreign countries.

Under the President's proposed program the richer countries would form a financial pool—an "International Development Association"—which would invest in the lesser developed countries of the world outside the Soviet orbit.

Benefit—One of the prime users of such a pool, the President says, would be the "Colombo Plan" countries of southeast Asia. The new international financing arrangement, although an adjunct of the existing International Bank, would be designed to give the borrower much greater flexibility in repayment.

Another Inflation Problem

• Washington economic planners are genuinely alarmed over the public's acceptance of inflation. They fear that once it dawns on the majority that inflation is here to stay, rising costs and rising prices will encourage one another much faster.

Until now, inflation has been rewarding a handful who take quick profits in such rising markets as stocks and real estate. A majority of the nation has never really understood—up to now—that both national political parties have been encouraging inflation as permanent policy.

What Can Happen—Dr. Arthur Burns, former Eisenhower advisor now president of the National Bureau of Economic Research,

"As more and more individuals come to believe in the inevitability of a creeping inflation, there is always a danger that they will behave in ways that add powerfully to the momentum of inflation and thereby strike at the foundation of the nation's prosperity."

Hedge—Also, Dr. Burns says, more people are losing faith in the value of the dollar. This is causing more speculation as a hedge against anticipated inflation. Once this idea gets around, Dr. Burns says, "extensive speculation in commodities or real estate or securities will inevitably occur and in time may lead to a general collapse of the economy."



Knows alloys...will travel!

 ${f F}_{
m erro-alloy}$ specialists from ELECTROMET often provide information helpful to melt-shop operators all over the nation.

These specialists can keep you up to date on the most effective and economical use of more than 100 ELECTROMET alloys. They help resolve unusual metallurgical problems with the aid of more than 300 scientists who have specialized equipment available at ELECTROMET's laboratories.

They have facts on new research and development work which you frequently can apply for savings in cost. They will give their immediate attention to your ideas on new alloys that can cut furnace time or add special qualities to the metal you make.

This metallurgical service is one of the many reasons why you get more for your money when you buy ELECTROMET products. ELECTRO METALLURGICAL COMPANY, Division of Union Carbide Corporation, 30 East 42nd Street, New York 17, New York.

Electromet FERRO-ALLOYS AND METALS

UNION CARBIDE

The terms "Electromet" and "Union Carbide" are registered trade-marks of Union Carbide Corporation.

Farwest Steel Needs Will Grow

Demand May Jump 50 Pct in Next 10 Years

Utility executive J. B. Black predicts West's population will increase by 14 million.

Its needs for homes, furnishings, schools, and highways will boost area's steel demand.—By R. R. Kay.

■ Look for a 50 pct hike in the western steel market in the next 10 to 12 years.

That's not a wild guess. It's a prediction from a man in the know. He's James B. Black, a U. S. Steel director and chairman, Pacific Gas and Electric Co.

California Bound — Mr. Black sees 39 million people living in the 11 western states in 1975. That's 14 million more than today. Three out of every five of these new Westerners will locate in California.

The 11 western states as a region are growing twice as fast as the nation as a whole. About a quarter of a million families set up house-keeping there each year.

That makes for an ever-expanding market for homes, furnishings, schools, hospitals, utilities, and highways. All are big users of steel.

More Local Steel—Western steel mills pour more than 8 million tons of ingots per year—a fat 60 pct rise since the end of World War II. Actually, the market has grown even faster. The region still brings in from eastern and midwestern mills about one-third of the steel it uses.

The West has only 6 pct of the nation's ingot capacity. But small as this steelmaking is, it has laid a solid foundation for manufacture of a variety of steel products. And the range is bound to grow.

"The industrial horizons of the West are broader than much of the nation yet realizes," Mr. Black told the San Francisco Regional Meeting of the American Iron and Steel Institute.

Construction Gains — Right now the upward thrust of business recovery on the Coast is gaining speed. Steel mills are operating at 80 pct of capacity.

Nearly half of the market in the 11 western states is for steel gobbled up in construction. Light construction work continues ahead of last year. So do engineering awards. They show a total of \$3.7 billion through September.

Companies keep pouring money into new plants and expansions. In northern California alone, some \$300 million has been committed. And that's only for the first eight months of this year.

Airliner Gets Finishing Touches Before Debut



DECEMBER ROLLOUT: Convair is planning December factory rollout for its 880 jet airliner with initial

flight scheduled for early next year. Here the first plane is rolled into final assembly area.



Greenlee Air-Feed Automatics offer you a 3-way profit advantage:

 Maintenance and change-over time is reduced by eliminating stock pushers, feed tubes and feed-out cams.

Eliminate Pushers and Feed-Out Cams

- Stock can be automatically air-fed to position in one or more machining stations permitting two or more pieces per cycle.
- Multiple feed-out flexibility enables you to finish machine a variety of pieces that ordinarily demand costly second operation setups.

If you are running into production headaches on a specific job, Greenlee may be able to adapt an "Air-Feed" to solve your problem. See your Greenlee Distributor.

Write for your copy of Catalog A-405 — first step on the way to more profitable production with Greenlee Automatic Bar Machines.

Removable fittings attach air lines to the stock reel tubes. A vacuum pump withdraws the piston when restocking. Push-button control panel is provided for starting and stopping.

Greenlee Standard and Special Machine Tools

Multiple-Spindle Drilling and Tapping Machines Transfer-Type Processing Machines Six and Four-Spindle Automatic Bar Machines Hydro-Borer Precision Boring Machines

GREENLEE BROS. & CO.

1811 MASON AVE. ROCKFORD, ILL.

Builders Will Go to the Public

They'll Try to Make a Case for Newer Tools for Defense

U. S. tool builders would like to change some government and corporate policies.

The aim: To arouse the manon-the-street to put on some pressure.—By E. J. Egan, Jr.

 U. S. machine tool builders have apparently committed themselves to the biggest public relations job their industry has ever tackled.

They aim to convince the "man on the street" that American metal-working plants must get equipped and stay equipped with up-to-date machinery. Joe Doakes must be made to understand that this is vital to both the military and economic security of his country.

Tough Job—It isn't going to be easy. At the moment, Joe Doakes probably couldn't care less whether factories buy new machine tools. Besides, he probably doesn't know what a machine tool is.

Way down at the root of this public relations job are a couple of ugly facts. They stem from something still more basic: Machine tools in U. S. plants keep getting older and older. Not nearly enough new ones are being bought to offset this trend.

Weakens Our Defense—As a result, the nation's capacity to defend itself against military threats gets weaker and weaker, builders say. And for the same reason, U. S. industries will slowly lose out to foreign competition in many market areas that were formerly considered ours alone.

So, Joe Doakes is apt to ask, "What keeps the factories from buying new machine tools?" Builders point to two reasons: (1) The Federal Government's unrealistic tax depreciation policy; (2) business management's own ignorance of present depreciation rules, and failure to use them to the allowable limit.

Heavy Going—This can get to be pretty deep stuff—hard enough for politicians and businessmen to understand, let alone Joe Doakes. Why bring Joe into the act at all? Can't the Government change the rules if they're bad? Can't businessmen wise up to the folly of paying hard-dollar taxes on what are, in many cases, paper profits?

Builders hope public pressure from an aroused man-on-the-street will do what they haven't been able to; make the politicos open up with more liberal depreciation laws.



JUST ELECTED: New officers of the National Machine Tool Builders' Assn. are: Ralph J. Kraut, Giddings & Lewis, pres. (top left); Alan C. Mattison, Mattison Machine Works, 1st vice pres. (top right); Everett M. Hicks, Norton Co., 2nd vice pres. (bottom left); Graham E. Marx, G. A. Gray Co., treas.

INDUSTRIAL BRIEFS

New Lab Service—Flexonics Research Laboratories, a new division of Flexonics Corp., has been established at Elgin, Ill. The new division, located at the company's research and development center, will provide testing and development service on a contract basis to industry and government.

Pipe by the Mile—A highly automated plant with newly developed equipment for the manufacture of cast iron pipe has been completed in suburban Chicago for James B. Clow & Sons, Inc. It was built and equipped at a cost of \$6.5 million. It will be used to manufacture cast iron pressure pipe of 6- to 16-in. diameter, in 18-ft lengths, by the metal mold process.

Missile Hearing Aid—The Data-Tape Div., Consolidated Electrodynamics Corp., Pasadena, Calif., has received a \$216,900 contract from the Air Research Development Command, Baltimore, Md., for magnetic - tape recorder/reproducer equipment. It will be used with range instrumentation previously supplied to the Air Force Missile Test Center, Patrick Air Force Base, Fla.



"Did you have a hard day at the orifice, dear?"

The Hall Suite—The latest tribute accorded to Dr. Ralph E. Hall, 73-year-old pioneer industrial water consultant—founder and immediate past director, Hall Laboratories, Div. of Hagan Chemical & Controls, Inc., Pittsburgh, is a suite of offices to be dedicated in his honor at the new headquarters building of the American Chemical Society in Washington, D. C.

Tank Farm—Graver Tank & Mfg. Co., Inc., has a contract to build all the storage tanks for a large refinery in Norway, now being built by an affiliate of Standard Oil Co., New Jersey. The refinery is under construction on a site in Slagen on the west side of the Oslo Fjord, 50 miles south of Norway's capital city. Graver will begin erecting the tanks in the spring of 1959.

Farwest Metal Show—New alloys and fabricating processes for general industry, aircraft, rockets, electronics, and petroleum production will be featured in the 11th Western Metal Exposition presented by the American Society for Metals, March 16-20, at Los Angeles' Pan-Pacific Auditorium.

Malleable Appoints — Hans J. Heine has been named technical director for the Malleable Founders Society. He will coordinate and supervise society research and technical activities.

You Name It—Revere Copper & Brass, Inc., has opened a new Revere Ware foil container plant in Fort Calhoun, Neb., near Omaha. With the new facilities and equipment, Revere will manufacture any size, shape, color, or format of foil containers for frozen foods and baked goods.

Ready By Christmas — Completion of new facilities for manufacture of 2000 tons per month of spare freight car parts at the Bessemer, Ala., plant of Pullman-Standard Car Mfg. Co. is expected by mid-December. All new buildings are now closed in and concrete floors are being poured prior to installation of machinery in the \$1 million development.

Jigs and Fixtures—A new national, nonprofit trade organization has been formed—"National Institute of Jig and Fixture Component Manufacturers." Membership in the association is open to all qualified companies, and inquiries should be directed to Harold Wrigley, secretary-treasurer, Vlier Engr. Corp., 8900 Santa Monica Blvd., Los Angeles 46, Calif.

1959 Packaging Showman — A. R. Stevens, vice president, Elgin Mfg. Co., Elgin, Ill., has been named chairman of the Show Committee for the Packaging Machinery Manufacturers Institute Show of 1959. The national exposition of packaging machinery and related packaging materials will be held at the New York Coliseum, Nov. 17-20, 1959.

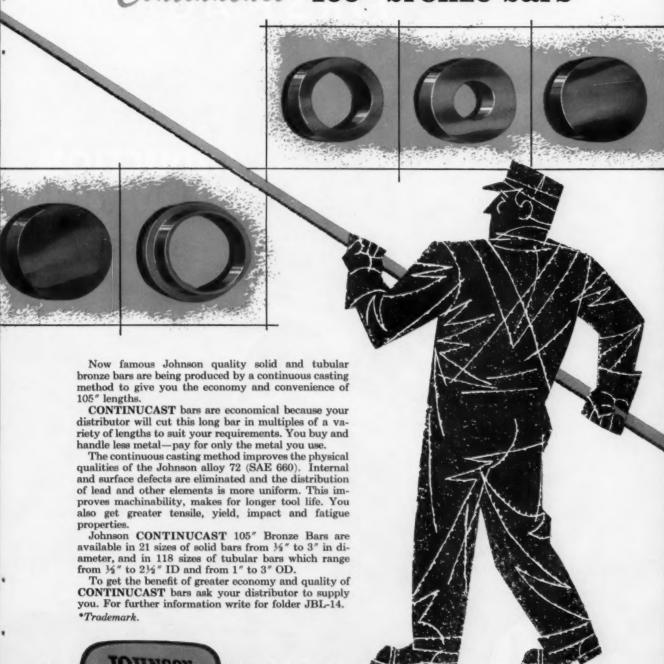
Call the Carpenters—Plans have been completed to expand the manufacturing and laboratory facilities of Anderson Chemical Co., Div., Stauffer Chemical Co. at Weston, Mich. The project, which will represent an investment of about \$200,000, will be handled by Stauffer's engineering department.

New Home Plate—American Can Co, will erect a building adjacent to its Bellwood, Ill., warehouse to house facilities for designing and producing lithographic printing plates. The new structure will house the 140 employees now engaged in plate engraving work in a leased building in Chicago.

Digging Out Sales—A new enlarged plant to increase production of pumps and mining equipment has been opened by Gardner-Denver Co. in Johannesburg, S. Africa. The plant is the eleventh production facility of the company which has its headquarters at Quincy, Ill.

Handling Trend—Clark Equipment Co., Buchanan, Mich., will build a factory in Michigan City, Ind., for its Brown Trailer Div. In addition to truck trailers, the new plant will produce Cargo Van bodies and shipping containers.

NOW greater economy, improved quality with JOHNSON Continucast* 105" bronze bars





Johnson Bronze

505 South Mill Street . New Castle, Pa.

Subsidiary: Apex Bronze Foundry Co., Oakland, Cal.



Ohio Rolls FIRST AGAIN!

Now with progressive

INDUCTION HARDENING

shaping metal for all Industry

- Produces a relatively stress free roll up to 100+ Shore "C" Sciencecope.
 - Controls hardness penetration.
- Offers superior roll performance.
 - Tested and proved by nearly 3 years' actual experience.



THE OHIO STEEL FOUNDRY CO.

LIMA, OHIO

Plants at Lima and Springfield, Ohio

LIMA... Virtually at the center of the steel industry

Ohio Iron and Steel Rolls:

Carbon Steel Rolls-Ohioloy Rolls-Ohioloy "K" Rolls-Flintuff Rolls-Double-Pour Rolls-Chilled Iron Rolls-Donag Iron Rolls-Nickel Grain Rolls-Nickey Rolls-Special Iron Rolls-Forged Steel Rolls



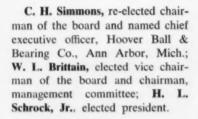
F. V. Geier, elected chairman of the board and chief executive officer, The Cincinnati Milling Machine Co., Cincinnati.



N. W. Muller, appointed vice president, Great Lakes Carbon Corp. and general manager, Research and Development Dept.



H. B. Randall, Jr., appointed district manager, New York office, Pratt & Whitney Co., West Hartford, Conn.



W. R. Heath, elected president, Buffalo Forge Co., Buffalo, N. Y.

J. F. Reid, elected president, Central States Bridge & Structural Co., Indianapolis.

L. I. Dana, appointed vice president, technology, and David Swan, vice president, research, Linde Co., division of Union Carbide Corp.

M. G. Smith, elected a vice president, The Electric Storage Battery Co., Philadelphia; J. A. McIlnay, elected vice president, marketing.

G. C. Morgan, appointed vice president, G. A. Gray Co., Cincinnati

S. A. Yasko, appointed vice president, director, sales, The Berkeley Co., Danville, Ill.

A. C. Buesing, named vice president, foundry sales, The Brown Thermal Development Co., Elyria, Ohio.



W. M. Olson, named asst. district manager, Chicago sales district, Kaiser Aluminum & Chemical Sales, Inc.



S. E. Bergstrom, elected president, The Cincinnati Milling Machine Co., Cincinnati.

F. F. Miller, promoted to vice president, engineering, Gear Grinding Machine Co., Detroit.

S. R. Hoffman, named assistant to the vice president-treasurer, Jessop Steel Co., Washington, Pa.

C. F. English, named treasurer, Sturtevant Mill Co., Dorchester, Mass.

Richard Gunter and George Bransom, promoted to assistant division manager and sales manager,



C. E. Ho, appointed asst. manager, market and economic analysis, Climax Molybdenum Co., a division of American Metal Climax, Inc.

respectively, The Garrett Corp.'s AiResearch Industrial Division.



C. C. Snider, appointed director, sales, Consolidated Electrodynamics Corp., Pasadena, Calif.

E. A. Perry, named technical representative, Plating and Electroplating Dept., Federated Metals Div., American Smelting & Refining Co.

F. G. Fabian, Jr., promoted to president, Dresser Mfg. Division, Bradford, Pa.

D. E. Stocking, appointed sales manager, Rochester Div., Consolidated Electrodynamics Corp., Pasadena, Calif.



E. A. Nedwick, appointed manager, Strip Steel Div., Peterson Steels, Inc., Union, N. J.

C. J. Tylka, appointed director, technical service, Cooper Alloy Corp., Hillside, N. J.

Dr. H. L. Gerhart, appointed director, research and development, Paint and Brush Div., Pittsburgh Plate Glass Co., Pittsburgh.



J. L. Montgomery, named product sales manager, plant equipment, Blaw-Knox Co., Pittsburgh.

A. E. Kornhauser, appointed treasurer, Controls Co. of America, Schiller Park, Ill.

E. L. Decker, appointed assistant chief engineer, Fuller Co., Catasauqua, Pa.



F. A. Tobitt, Jr., named district sales manager, Indianapolis district office, Armco Division Sales, Armco Steel Corp.

Following appointments are within the Container Div., Jones & Laughlin Steel Corp.: E. H. Thomas, named manager, Cleveland plant; N. E. Geisler, named



CUSTOM-BUILT and quality-built for long-time, low-cost service. Fiat steel wheels, solid rubber or pneumatic tires. Fifth-wheel or four-wheel knuckle steer. Steel or wood deck, or special superstructure. Any desired capacity.

Telephone or write to:



EASTON CAR & CONSTRUCTION COMPANY + EASTON, PA.



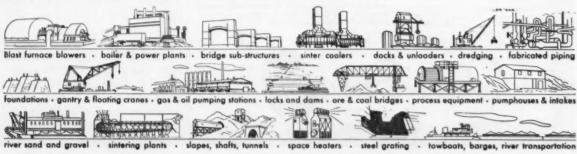
New Dravo-Lurgi Sinter Plant for Armco Steel

This Armco Steel Corporation installation at Ashland, Ky., is the first of several Dravo-Lurgi sinter plants to be completed. The new facility will make it possible to reclaim accumulated sludge and flue dust, increase the efficiency of blast furnace operation.

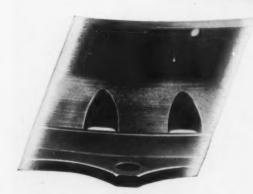
Built into extremely limited space, the plant receives and stores a day's supply of raw materials in eight hours. It then sinters twenty-four hundred tons per day for blast furnace charging.

The Armco facility is one of four new Dravo installations, two of which have capacity greater than any plant in the United States. For information on sintering equipment or the other products and services listed below, write DRAVO COR-PORATION, PITTSBURGH 25, PA.

DRAVO





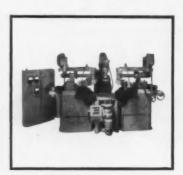


AFTER BRUSHING

Burrs thoroughly removed... edges and surface junctures blended to 6-8 microinches. Each part precision-finished quickly, uniformly. Osborn Brusbamatic_® finishing time: 6 minutes.

6 minutes to microfinish this jet engine part!

...it's 7½ times as fast with OSBORN Brushamatic. Methods



THESE JET ENGINE PARTS are microfinished at low cost, automatically—at high production rates on Osborn Brushamatica 51-3L Machine. Three Osborn Fascuta brushes (with compound) operating at 1750 rpm do the job.

IT used to take 45 minutes to hand-finish this precision jet engine component. Today, this leading jet engine manufacturer does the job in just 6 minutes with Osborn Brushamatico Methods. It's 7½ times as fast and results in significant dollar savings.

Slow hand-finishing still left scratch marks to cause possible stress fractures. But, rapid Brushamatice finishing produces a precision 6 to 8 microinch surface . . . automatically removes burrs . . . blends sharp edges and surface junctures.

Result: a fast, economical, precision Brushamatics finish that reduces stress concentration areas. Uniform, high-quality parts are produced at high production rates.

It's typical of how Osborn Power Brushing works to help you speed production... cut costs ... improve product quality. An Osborn Brushing Analysis, made in your plant at no obligation, will show you how. Write or wire us for details—and for your copy of the 20-page Brushamatice booklet. The Osborn Manufacturing Company, Dept. F-75, Cleveland 14, Obio.

Klingensmith, named Atlanta plant superintendent.

R. J. Laws, appointed general

manager, Lebanon plant; W. S.

R. J. Laws, appointed general sales manager, Baker Industrial Trucks, a division of Otis Elevator Co., Cleveland.

J. W. Bodwell and R. T. Harvey, appointed assistant general managers, sales, Joseph T. Ryerson & Son, Inc., Chicago.



C. W. Azbell, named district sales manager, Columbus district office, Armco Division Sales, Armco Steel Corp.



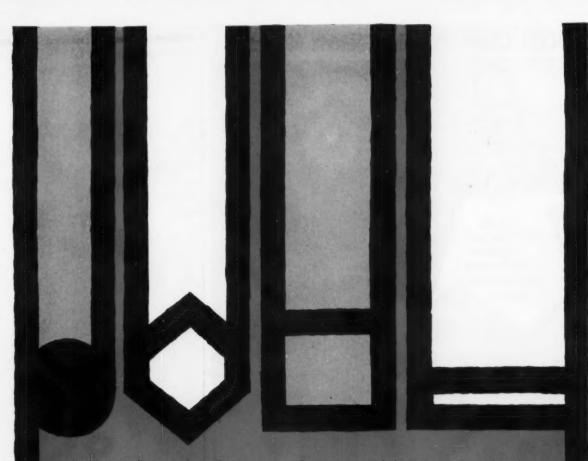
C. L. Hill, named district sales manager, Louisville district office, Armco Division Sales, Armco Steel Corp.

C. E. Smith, named plant manager, Oberg Mfg. Co., Tarentum, Pa.; J. C. Vecchi, promoted to asst. plant manager; E. S. Hilty, made sales manager; C. V. Schrecengost, named asst. sales manager; C. E. Wagner, named chief engineer; Ed-



BRUSHING MACHINES . BRUSHING METHODS

POWER, PAINT AND MAINTENANCE BRUSHES . FOUNDRY PRODUCTION MACHINERY



STANDARDIZE WITH VERSATILE AMBALLOY STEELS

By standardizing with versatile Amballoy—personalized steels from Byers—you can narrow your necessary chemistries to one or two. Then, through heat treating, you can get the wide variety of exacting physical characteristics you need. Standardization simplifies. Simplification saves money

Simplification saves money.

Amballoy helps metal-users shrink unproductive capital, king-size inventories, idle

space, excessive handling, processing costs. Need convincing? Let the Byers metallurgist relate how Amballoy steels can be the work-horse material for your critical applications. For further information and the name of your steel service center stocking Amballoy, write or call: Manager of Steel Sales, ATlantic 1-8110, A. M. Byers Company, Clark Building, Pittsburgh 22, Pennsylvania.

SAVE THROUGH YOUR STEEL SERVICE CENTER

Your Steel Service Center distributor stocks size after size, shape after shape, grade after grade, finish after finish of all the steels you metal-users have to have in a hurry.

He meets your requirements in 24 hours or less. He does it at a mere fraction of what it would cost you to do it yourself. It pays to let him do the slitting, flame cutting, sawing, shearing. He has the equipment, the manpower, the know-how.

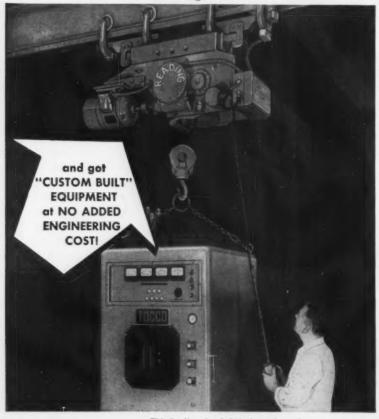
Your Steel Service Center distributor is the man with the big inventory. It's his business to assume much of the risk. Let him furnish the space, the capital, the equipment. Get Amballoy steels from him.

And if you need help in standardizing on the right alloys for your requirements, write or call us: ATlantic 1-8110, A. M. Byers Company, Clark Building, Pittsburgh 22, Pa.



A. M. BYERS COMPANY

TOCCO Chose Reading Electric Hoists ...



This Reading electric hoist is moving a sheet metal cabinet from a heating station to the production line. All Reading hoists at Tocco have the same two-button pendant control.

Rapidly rising production goals are being met in Ohio Crankshaft's new
 Tocco Division plant in Cleveland's South Side . . . thanks partly to Reading
 Electric Hoists.

Tocco, a leading producer of induction heating equipment, designed the new plant to meet the needs of its rapid expansion. Pre-planned materials handling, involving trucks, bridge cranes and electric hoists, is paying off in fast, orderly movement of materials from operation to operation.

Playing a big role in this integrated handling system is a series of Reading electric hoists, "custom-built" from standard Reading units to meet the exact requirements of each operation. These hoists permit Tocco workmen to move all material without manual lifting.

Reading's unique "Unit Construction" plan offers you special equipment for your own plant at the low cost of standard parts. Investigate now this proven way to get faster, better materials handling. A note on your company letterhead will bring a Reading engineer to analyze your handling operations . . . at no obligation.

Reading Crane & Hoist Corporation, 2101 Adams St., Reading, Pa.

READING HOISTS

HOISTS

OVERHEAD TRAVELING CRANES

ELECTRIC HOISTS ward Klemzak, named toolroom superintendent; L. T. Wohlin, promoted to assistant chief engineer.

Following promotions are within the Research Division of Armco Steel Corp., Middletown, O.: R. L. Kenyon, named assistant to the vice president, research; R. S. Burns and V. W. Carpenter, named director, metallurgical research and director, magnetic materials research, respectively.



W. C. Rowley, named asst. manager, Electric Steel Foundry Co.'s plant at Danville, Ill.

H. R. Baer, appointed sales representative, northeastern Ohio and northwestern Pennsylvania territory, Leschen Wire Rope Div., H. K. Porter Co., Inc., St. Louis, Mo.

M. R. Chance, appointed chief metallurgist for W-K-M, a division of ACF Industries, Inc.

E. J. Bishop, appointed sales engineer, Chicago branch office for steel sales, The Timken Roller Bearing Co.

F. E. Huss, appointed sales and service representative, Northwestern Ohio, Lewis-Shepard Products, Inc., Watertown, Mass.

C. H. Lilly, appointed liaison engineer, Old Forge, Pa., Mfg. Div., The W. L. Maxson Corp.



Your Diamond Wheel Insurance Policy

It guarantees the full diamond content of the wheel . . . assures complete dependability of the diamond concentration mark on the wheel itself . . . and bears the signature of the President of Norton Company.

You get this certified protection with every Norton diamond wheel you buy.

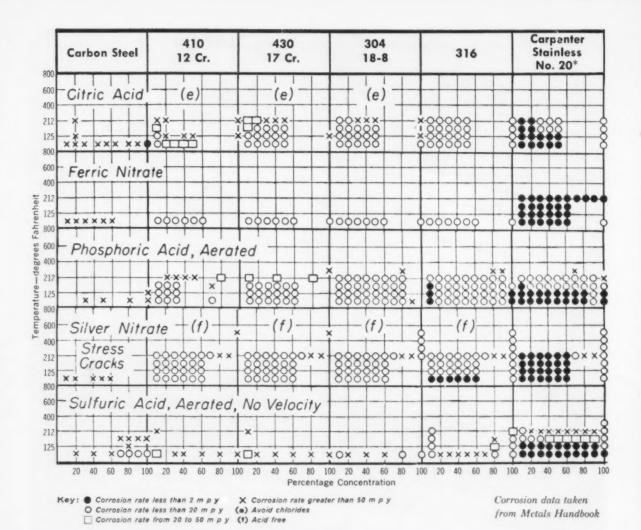
This is just one reason why Norton diamond wheels are recognized as industry's Crown Jewels. Other good reasons for Norton leadership include: pioneering in the use of diamonds, both mined and man-made . . . duplicating wheel specifications with constant accuracy...introducing all three diamond wheel bond types: resinoid, metal and vitrified . . . doing all its own sizing and checking of diamonds...bringing you a complete diamond wheel line, covering all applications, with fast deliveries from full stocks.

See your Norton Distributor for the diamond wheels you need — certified for your protection. NORTON COMPANY, Worcester 6, Mass. Plants and distributors around the world.



Waking better products . . . to make your products better

NORTON PRODUCTS Abrasives · Grinding Wasels · Grinding Machines · Refractories · Electrochemicals ... BEHR-MANNING DIVISION Coated Abrasives · Sharpening Stones · Pressure-Sensitive Tapes



The best single answer to most corrosion problems – *[urpenter* Stainless No. 20*

Carpenter Stainless No. 20 is your lowest cost way to control the most severe corrosive conditions. It's available in sheet, plate, bar, forging billets, forgings, tubing and pipe through your local distributor. And Carpenter Stainless No. 20 simplifies inventory problems. You don't need duplicate stocks of other products... one stock of Carpenter Stainless No. 20 will put an end to most corrosion problems. Order now from the "House of Corrosion Control". Complete technical data and job performance reports are yours for the asking. Write on your company letterhead to The Carpenter Steel Company, Alloy Tube Division, Union, N. J.



available through representatives and distributors in over 40 cities . . . coast to coast

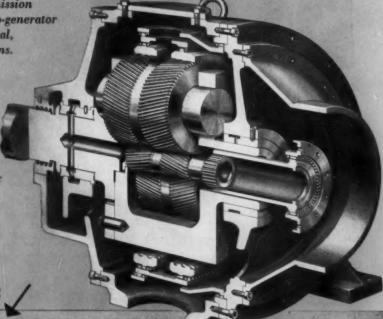
DE LAVAL-STOECKICHT PLANETARY GEAR

...for high speeds...high horsepower

Proved in hundreds of installations abroad totalling over 3,000,000 horsepower-now available in America!

For all high torque power transmission applications such as pump turbo-generator and compressor drives in industrial, municipal and marine installations.

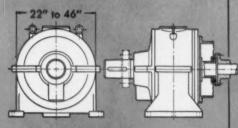
This cutaway view of the De Laval-Stoeckicht Planetary Gear shows how it provides flexibility for proper load distribution throughout the gear members. The thoroughly proved and tested design is completely reliable in transmitting high horsepower for high speed applications. • Highest efficiencies (98% or higher) ... no high speed bearings ... less friction losses.



Check These Advantages:

Small Size - Light Weight

Compact—low weight per hp. Sizes range from 22" to 46" in diameter, depending on horsepower requirements. Example: 5000 hp planetary unit weighs 1700 lbs. against 6000 lbs. for conventional gear.



Convenient Arrangement

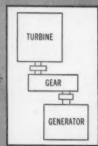
TURBINE

GEAR

4

GENERATOR

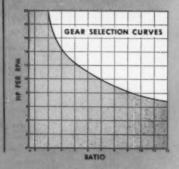
Co-axial or "in-line" arrangement of gear members takes up far less space than parallel axis gears of equivalent horsepower rating.



For further details, rite for Bulletin 2400.

Wide Application

Capacity range shown in shaded area on chart below. For other applications, contact your De Laval Sales Engineer.







DE LAVAL Steam Turbine Company

899 Nottingham Way, Trenton 2, New Jersey

acheson dispersions digest

COLLOIDAL GRAPHITE, MOLY-SULFIDE, VERMICULITE, AND OTHER SOLIDS

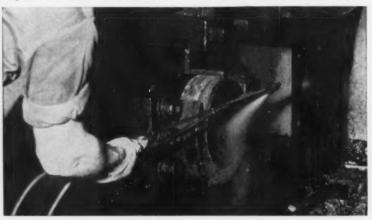
Reporting uses for

Dies last three times longer with 'Aquadag', according to another prominent midwest extruder. Metal pickup on the extruding dies has been completely eliminated by the use of this Acheson dispersion, extending the effective use of the dies from 1000 to 3000 strokes. The evaporation of its water-base leaves a dry, adherent "graphoid" film on all lubricated surfaces, inhibiting the build-up of abrasive precipitates. At the same time, the unbroken, microscopically-thin film that 'Aquadag' provides, facilitates metal flow and reduces scoring to a negligible minimum. Application of the lubricant is by spraying a dilution of 1 part 'Aquadag' to 20 parts water, on the die surface before each "push" of the extrusion press

A 'dag' graphite coating is also applied to the follow blocks on this company's 1400 ton horizontal extrusion presses. For purposes of even greater economy, 'Prodag' — semi-colloidal graphite in water — is used in this application. This effective parting agent prevents the

WHY 'DAG' DISPERSIONS MEAN PERFORMANCE IN ALUMINUM EXTRUDING

The excellent lubricating properties of Acheson Colloidal Graphite, under conditions of extreme heat and pressure have been confirmed by leading extruders of aluminum, steel, copper, brass, lead and other metals. Water-base dispersions of colloidal graphite used in the following application histories have provided savings in material handling, reduced maintenance time and expense, prevented seizure, extended die life, and produced extrusions of more uniformly high quality. Any one of these benefits should make profitable reading for you.



For faster, more uniform application with less material consumption, Aluminum Extrusions, Inc. finds 'Aquadag' their best die lubricant.

A little 'Aquadag' goes a long way for Aluminum Extrusions, Inc., Charlotte, Michigan. This company, one of the leading independent extruders in the country, has found that by applying 'Aquadag' on die surfaces they have effected a 30% savings in their material handling. Formerly, they had used an oil-graphite mixture which required a dilution ratio of 16 lbs. of graphite to a 55 gallon drum of oil. It was too slowly applied by swab and too coarse to apply by

Extended die life and extrusions with more perfect surface finish, are attributed to the use of 'Aquadag'.

flash, back-extruded from the billet skin, from locking the butt to the follow block. An Acheson dispersion is very possibly the answer to your lubricating troubles. For additional information, write for your free copy of Bulletin 426. Address Dept. IA-118. spray with any degree of efficiency. With 'Aquadag', Aluminum Extrusions has a lubricant that is finer in particle size, permits wider coverage, and provides greater "sprayability". These minute particles pass freely through the spray nozzle, eliminating the costly downtime formerly involved in cleaning clogged equipment. The tough, dry film 'Aquadag' forms upon the evaporation of its water carrier, doesn't smoke or react when applied to hot dies and metals. This improves working conditions as well as extends die life. Important also to both die surfaces as well as the finished extrusion, is the fact that this durable, low-friction film allows easier, more uniform metal flow.

Considered in relation to the over 12 million pounds of aluminum extruded yearly at this plant . . . 85% of it in fabricated form . . . 'Aquadag' has brought important production efficiencies and material economy to Aluminum Extrusions, Inc. In many, similar instances where product quality and basic economy are demanded, Acheson colloidal dispersions have gained ready acceptance.

Exclusive Acheson processing techniques guarantee a consistently uniform top-quality product. If your problem is more effective lubrication under normally adverse conditions of extreme temperature, pressures, or abrasion, call in your Acheson Service Engineer.



ACHESON Colloids Company

PORT HURON, MICHIGAN

A division of Acheson Industries, Inc.
Also Acheson Industries (Europe) Ltd. and affiliates, London, England

Offices In: Boston • Chicago • Cleveland • Dayton • Detroit • Los Angeles • Milwaukee New York • Philadelphia • Pittsburgh • Rochester • St. Louis • Toronto



STRAIGHT LINE: Machine with electronic "memory" mills pistons to within ±2 g. of specified weight.

Automation Adds a Brain Cell

"Feed Ahead" Control Lets Weigh-Miller Think, Then Act

Here's a new principle in machine tool control. You might call it "feed ahead."

It's used on this weigh-miller which first gages a part, memorizes the data, then sets up controls for precise machining.

By R. H. Eshelman— Engineering Editor

Machines can never be given judgment ability, according to a large segment of experts. But that becomes a moot question when you look at this new weigh-milling machine.

So far the most advanced auto-

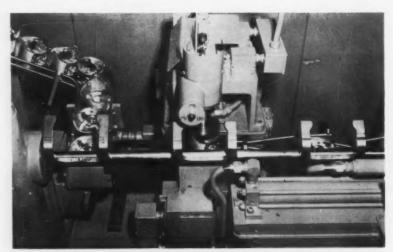
mation in metalworking is conceded to be equipment which uses the principle of "feed-back." This gives a machine ability to correct its own operations. It does so by continuous automatic adjustments, made from in-process gaging or other data.

In milling aluminum pistons to a precise weight, the new machine goes a step further. It first weighs the piston. Then it stores the data in an electronic memory circuit. When the piston reaches the milling station, electronic controls set up the work and position the cutter so it removes just the correct amount of stock. In effect, this amounts to making a judgment decision of how much stock should be removed.

Broad Principle—Although such types of operations are rapidly assuming more importance for mass producers of engines and other reciprocating components, this machine may have only limited application elsewhere. But the principle, and even the technique should have wide significance for all metalworking industries.

The real meaning of the development is clear. Now there's a proved way of controlling machines on routine jobs which require a simple decision and adjustment. And the control can be both more exact and unfailing than human hands and judgment. Also, it's faster.

Practical Approach — Credit for



FAST TURN: Plunger orients piston in first station. A sensing finger then checks. Plunger repositions piston 180° if finger hits wristpin offset.

the development is shared by machine designers of Snyder Tool & Engineering, Detroit, which built the machine, and engineers of Oldsmobile Div., G.M.

Comments A. J. Mitchell, production engineer and general ma-

chining supervisor at Olds: "Automatic machinery up to now has been like a new toy—everyone's trying to outdo the other. But you can go too far," he warns. "There are some installations in any large plant that'll never pay out."

Does This Machine Really Think?

If you concede use of the term electronic "brain," do these actions add up to "machine judgment"?

Overweight Signal—Piston on scale produces a voltage signal in a differential transformer proportional to its excess weight.

Amplifier Memory —Amplifies difference between overweight signal and memory signal, drives servomotor until difference is zero.

Memory Unit—Retains overweight-voltage signal and allows depth of cut to be set while piston indexes.

Weight-Removal Positioner—Sets wedge stop which determines depth of cut. It has a servomotor that drives a blocked-center, four-way valve spool. A differential transformer measures spool position. Servomotor drives spool until spool's position equals the difference between the overweight signal and the depth of cut signal. In this zero position, spool acts to lock the wedge stop for the milling cut.

The only answer, he feels, is to analyze each job and keep the mechanics as simple as possible. That's exactly the approach used on this installation.

Tested Elements—Although this machine represents a new concept in automation, virtually all of the components and principles used have been well proved in production. This goes for the weighing units, transfer mechanism, electronic and hydraulic controls, as well as the toolirs.

The basic machine is an in-line transfer type. Actual mechanism is the typical transfer bar with turn-down fingers. Other automation features include sensing and orientation of parts, in-process gaging, static turnovers, and automatic machine shutdown if pistons are not machined within ± 2 g. of correct weight. The machine is designed to handle up to 600 pieces per hour.

How It Works—Such a high production potential is made possible by the inherent simplicity of the equipment. One unique feature is the mechanism that positions the milling cutter. Heart of this is an electrically-controlled servo. Through a hydraulic valve it accurately positions a wedge stop, pre-setting the cutter. Positioning takes place without returning the wedge to a fixed reference point between workpieces.

In operation, the permanent mold-cast pistons enter a loading station in upside-down position. A transfer finger traps parts one at a time and moves them over to an orienting station. Here a rotating sensing finger checks alignment by the wristpin offset of the piston. Backward parts are turned 180°.

Thus each piston passes on to the first weigh station in identical position. Spiral rails between the orienting and weigh stations turn the pistons over while they are advanced by the transfer fingers.

Pre-Process Gage — A Shado graph weigher gages the amount each piston is overweight. This data goes into an electronic memory sys-

tem which passes the information to the servo-valve control as the piston enters the milling station. The data is translated into a position of the wedge stop. This predetermines the amount of material the cutter must remove from the piston's weigh pads.

In the machining station, the piston is clamped and milled from underneath by a 3½ in. diam, inserted-blade carbide cutter. After milling, each piston transfers through an in-process gaging station. Here another Shadograph weighs it a second time to check accuracy of the milling operation. If any part is over the weight limit, the machine immediately shuts down.

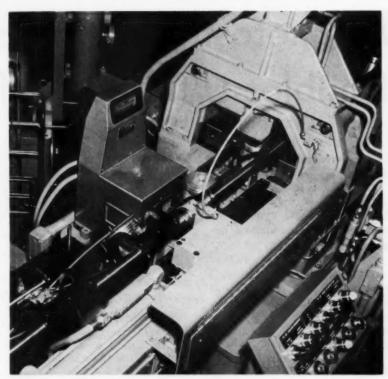
Quality First—"The thing we like best about this development," says Ralph McNutt, Olds motor plant supervisor, "is that it gives us consistent quality—higher than we've been able to get previously." Although speed and reliability are necessary in high volume production, the entire purpose of this operation is to improve balance and functioning of the part.

"In our highly competitive situation today," he explains, "quality is becoming increasingly important. Anything that will boost it is well worth considering."

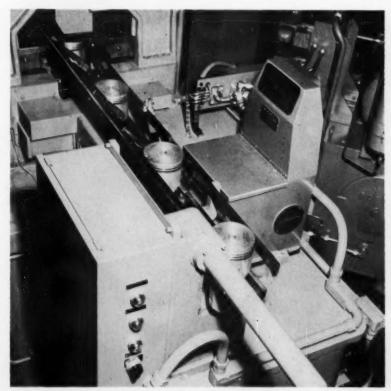
Must Payoff—McNutt acknowledges, however, that reliability is the real test of a new automation setup. For when production engineers look at mechanization of any specific job today, they want to know two key things: Is it practical? Will it pay off?

On both counts, the Olds requirement of utmost simplicity has proved out in this machine. The firm's engineers refer to the spiralrail turnovers as a case in point. They're uncomplicated but effective.

Reprints of this article are available as long as the supply lasts. You may obtain a copy from Reader Service Dept., The IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.



WEIGH AND MILL: Turnover rails (static automation) invert pistons for weighing. Milling station is next. Milling cutter comes up from below.



FINAL CHECK: A second in-process scale weighs the milled-to-weight pistons. Machine stops if they do not check out within ± 2 -g, tolerance.

Magnetostrictive Transducer Doubles Ultrasonic Efficiency

Here is a new transducer that boosts ultrasonic efficiency by 100 pct or more.

It's bound to uncover important metalworking applications that were once considered impractical.

Possibly the most significant breakthrough in the application of ultrasonics to metalworking was announced recently. It is a spacedlamination transducer that works on the magnetostrictive principle—but with a highly significant difference. Compared to the conventional magnetostrictive transducer, it gives twice the usable ultrasonic power for the same electrical input.

Up to now, the weak link in useful ultrasonic systems has been the transducer. This is no longer the case, according to Dr. R. A. Ramey, who developed the spaced-lamination tranducer for Westinghouse Electric Corp. "We view it as the component whose perfection will make ultrasonic energy abundantly available in the future."

New Design—The job of a transducer is to change electrical energy into mechanical sound vibrations, much as a loudspeaker does in a radio set. The Westinghouse transducer involves a radically new design which should open up a variety of untapped applications for ultrasonics. These now appear to be both technically feasible and commercially significant.

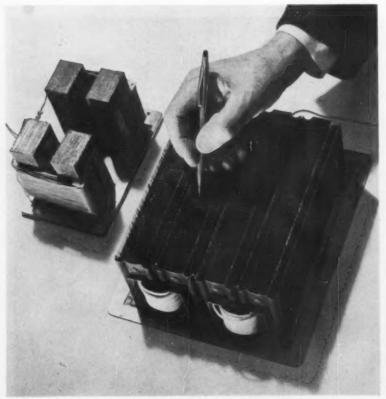
Ultrasonic cleaning is one area of application that will be appreciably broadened by the new transducer. Transmitted through a liquid, ultrasonic vibrations clean, degrease, tin, and solder a variety of materials. Applied directly to metal surfaces, such vibrations can also be used for welding, cutting, or grinding.

Bright Future — But as Dr. Ramey points out: "Ultrasonics has not yet assumed the role that many of us foresee for it. Unsolved technical problems have made ultrasonic equipment too costly, too inefficient, and too low in useful power to be broadly assigned to many of the jobs it can perform."

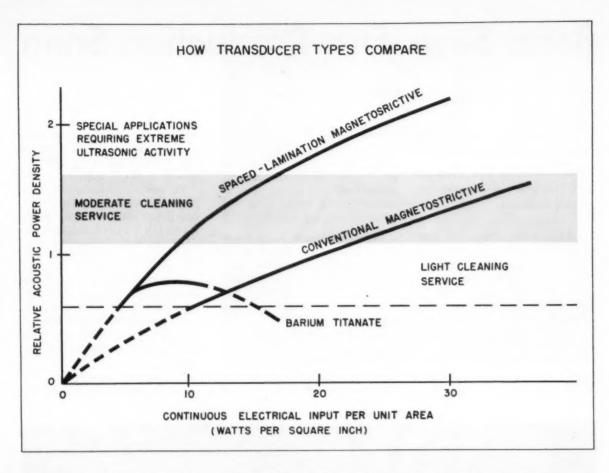
A magnetostrictive transducer consists essentially of a coil of wire wrapped around a core of magnetic material, usually an alloy of iron or nickel. Alternating electric current flows in the coil and sets up a magnetic field. The magnetic field alternately magnetizes and demagnetizes the metal core, causing it to change very slightly in length.

Big Difference—By this means, a metal plate bonded to the core is vibrated back and forth a few tenthousandths of an inch at a desired frequency. A frequency often used in metalworking applications is in the range of 20,000 cycles.

The new transducer—because of its spaced laminations—differs from conventional design. Conventionally, thin metal strips or laminations are stacked like a pack of playing cards. Wire is wrapped lengthwise around the stack. The entire assembly is driven by the electric



NEW APPROACH: The spaced-lamination transducer (right) marks a new approach in ultrasonic equipment design, is far more efficient.



current flowing in the wire. Several such stacks are placed on end, spaced a few inches apart, and welded to a metal plate to form the complete transducer.

Works Like Piston — Such construction permits the stack to energize the plate only at the spot to which it is attached. The plate is driven at scattered points on its surface. It responds by vibrating in a sort of wavelike motion. Unless the plate is perfectly "tuned," scattered vibrations tend to oppose and cancel each other.

The new transducer does not vibrate in a wavelike motion. Instead, the whole plate pulses in and out with a single piston-like movement. To date, this appears to be the most efficient type of motion for producing ultrasonic vibrations. Simpler and more efficient, it requires no grinding or costly machining.

Greater Power-To insure pis-

ton-like action of the transducer plate, the new transducer entirely eliminates the idea of separate stacks of laminations scattered at intervals across the plate's surface. Each lamination is separately attached to the plate. Each is a driving element, working in unison with all others.

Compared to conventional magnetostrictive transducers, spaced lamination gives twice the usable ultrasonic power for the same electrical input even at lower levels of acoustic power density. At higher power densities, the efficiency of the new transducer is even more pronounced. This relationship is shown in the accompanying chart.

Already In Use — Another advantage of spaced lamination is the equal distribution of power over all the plate. Power is not concentrated only in the scattered "hot" and "dead" spots characteristic of wave-

like plate vibration, tuned or not.

Thanks to the new transducer, Westinghouse has already made practical use of ultrasonics in its manufacturing operations. Included are such operations as electroplating aluminum bus bars with silver, cleaning printed circuitry boards for television and radio receivers, and decontaminating pieces of nuclear apparatus.

In a plating application, the required manufacturing operations were reduced from twelve steps down to three. Time required was cut from 30 minutes down to 2½ minutes.

Super Pressures — These and other applications of ultrasonics depend upon the production of a sound intensity sufficiently high to produce a secondary effect known as cavitation. This refers to the creation and collapse of millions of tiny vapor bubbles in the medium through which the sound travels.

Band Saws End Production Snag

By Paul Zellers-Superintendent of Maintenance, Clifford-Jacobs Forging Co., Champaign, Ill.

It's more than just cutting faster: Handling comes in too.

Band machines can keep up with the varied demand of forging hammers.

• Cutting rough billets and bars into precision blanks is a vital part in almost every forging operation. But it can be a real headache.

At Clifford-Jacobs Forging Co., an inefficient cut-off operation kept forging hammers waiting for blanks too much of the time. Shears were used to cut small billets and bars. Hack saws handled die inserts, while circular "cold" saws took care of larger billets.

Even with all three types of equipment running around the clock, they could not keep up with the demand. This bottleneck led to the installing of a band type cut-off saw, DoAll Model C-58 with automatic feed and indexing.

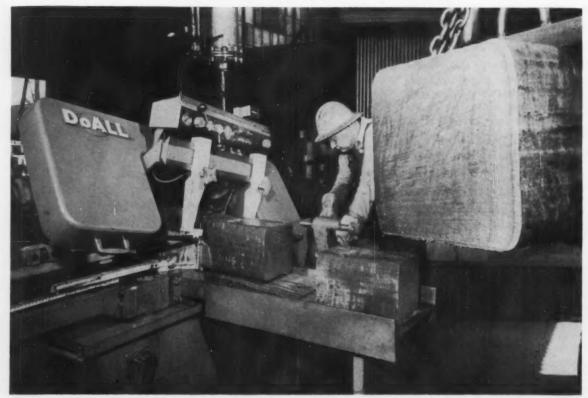
Dramatic Results — An 8-in. round billet of die steel that formerly took 8 hours of steady sawing now is sliced off in 1 hour. Mild steel billets 12 x 12 in. square take 12 to 14 minutes instead of an hour per cut.

With performance like this, another band saw unit was installed less than a year later. In the first 3 months of combined operation with the new saws, the entire previous year's output of blanks was equaled. And since the first installation no time has been lost at the hammers because of lack of blanks.

The new units solve several other problems. Vertical nesting vises now permit multiple cutting of billets up to 4 x 4 in. It couldn't have been done before because of difficulty of alignment.

Lower Costs — Scrap losses blade costs and maintenance are all reduced. In fact, maintenance costs have dropped 90 pct. In 3 years of combined operation, the units have required only routine service and lubrication.

Precision cutting and narrow kerf width account for material savings



SLICING THE BIG ONES: Band unit cuts 9 x 9 in. forging billets in production sequence. No longer are

forging hammers idle waiting for blanks. Saw blade gives up to 15,000 sq in. cutting on AISI 1040 billets.

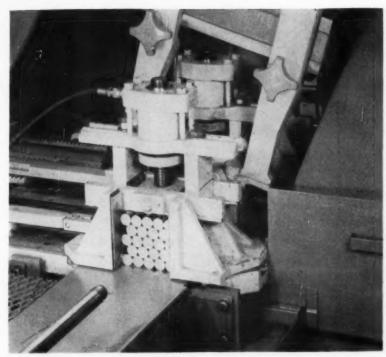
amounting to many tons each year. On 9 x 9 in. billets weighing 0.023 lb per 0.001-in. length, a 0.060-in. reduction in kerf saves nearly 1½ lb of metal per cut.

Undersize blanks resulting in shrinks and remelting are almost eliminated. The saws hold length tolerances of ±0.006 in.

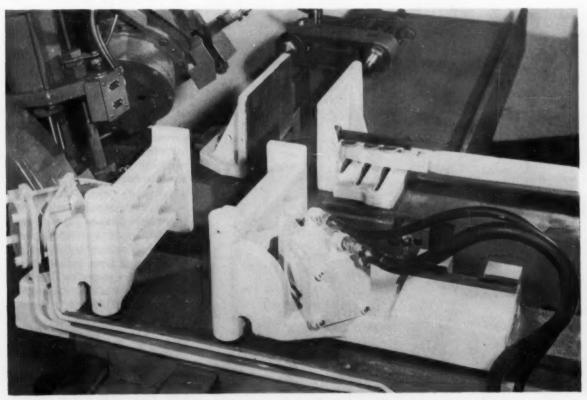
Long Blade Life—Where 10 cuts through a 10 x 10 in. billet was good for a hack saw blade, Demon high-speed steel bands stand up for at least 50 cuts—and do it in half the time. On AISI 1040 billets, the new blades cut up to 15,000 sq in.

Such blade life not only saves the time lost in blade changing, but also eliminates the cost of the fulltime blade sharpening operation needed for the circular saws.

Cost analysis shows initial cost of both units has already been returned more than twice over. Output per man hour has increased more than eight times. Blade costs are down more than half.



MULTIPLE CUTTING: Vertical nesting vises permit alignment of billets up to 4×4 in, for multiple cutting. Saws hold to ± 0.006 in, tolerance.



FOR ODD SIZES: Special jaw holds scarfed or outof-line billets for automatic indexing and precision cut-

ting. This device and narrow kerf width account for material savings amounting to many tons a year.

Heat Treated Ductile Iron Offers Wide Property Range

By C. A. Anderson-Plant Metallurgist, Baker Perkins Inc., Saginaw, Mich.

With new materials constantly making their debuts, it's easy to overlook some less obvious features of old ones. Ductile iron is a good case in point.

Heat treatment transforms it into a host of types that fill special needs at low cost. Ductile iron comes in a number of standard grades that can be transformed into a whole new family of engineering materials.
 Through proper heat treatment, its structure can be modified practically at will.

Chief among its attributes is the fact that ductile iron is an elastic material. Its modulus of elasticity ranges from 23 to 26 million psi, depending on carbon content. This is true of all types except the highalloy austenitic kinds; these have moduli of 15 to 18.5 million psi.

Metallurgically speaking, the chief factor which limits strength and kills ductility in gray cast iron is the presence of random graphite flakes. These break up the continuity of metal matrix, in effect setting up a series of tiny notches which act as stress concentrators.

Takes Nodular Form—In ductile iron, addition of a small amount of magnesium completely changes the structure of the metal. The graphite takes on a spheroidal shape, presenting the minimum of surfaces for a given volume. This removes discontinuities in the surrounding metal.

With this ductility, the material can be used for castings which are intricate or have very light sections, yet must meet severe service conditions. The castings may vary from fractions of an ounce to 50 tons, with section thicknesses from less than ½ in. to 48 in.

Today, six types of ductile iron—providing various combinations of strength, ductility and toughness— have been established commercially. The number designations for particular types indicate minimum tensile properties. For instance, type 60-45-10 means that the iron has 60,000 psi minimum tensile strength, 45,000 psi minimum yield strength with 10 pct elongation.

Two Special Types — Besides four regular types of ductile iron, there are two specials—a heat resisting grade, and a high alloy type sold as ductile Ni-Resist. The heat



VARIED SECTIONS: Four-ton turret housing for special machine is 60-45-10 ductile iron. It's easily cast in light or heavy sections.

resistant type is alloyed with silicon, usually in the range of 3 to 6 pct. Its use is restricted to low shock applications. Ni-Resist ductile iron contains 18 to 35 pct Ni and up to 5 pct Cr to provide high corrosion and heat resistance.

Because ductile iron combines the excellent wear resistant qualities of cast iron with the strength and toughness of steel, it makes an excellent gear material. Ductile iron gears generally outwear steel gears of the same hardness. As an added bonus in replacing steel gears, increased tool life and decreased machining time result.

Since ductile cast irons also have good machinability, they help reduce cost of machining. Added to this, the material itself is not expensive, even in first cost.

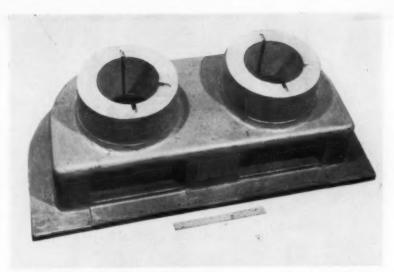
The accompanying charts show how, with proper heat treatment (annealing, normalizing, oil quenching or flame hardening), it's possible to vary hardness, wear and shock resistance of ductile iron.

Requires Care—In heat treating ductile irons, good practices must be observed, especially when air and oil quenching. For instance, it's entirely possible to over or undersoak. And, an atmosphere producing excessive scale can affect the quench.

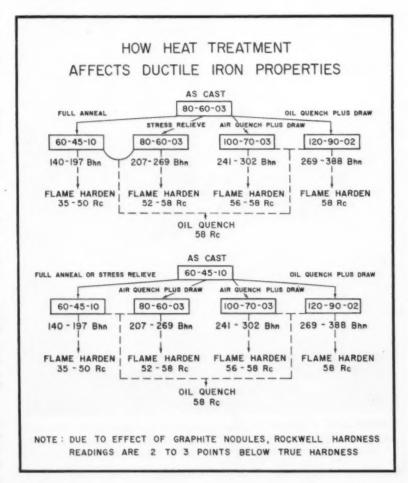
Quenching from 1650°F proves most satisfactory. The draw temperature should be held between 1000° to 1150°F. In this range, hardness will vary from 363 to 241 Bhn.

Any grade of ductile cast iron except heat resistant and ductile Ni-Resist may be employed for uses requiring maximum hardness. Hardnesses up to 58 Rc have been obtained by oil quenching from 1650°F followed by a 300°F temper.

Also Flame Hardens—All grades except heat resistant and ductile Ni-Resist also can be flame hardened. However, the final hardness that can be achieved is partly a function of original hardness, up to about 269 Bhn. Many users who flame harden parts usually request



FOR SHOCK RESISTANCE: Ductile iron trough end for chemical mixer takes high shock loads. It machines about 20 pct faster than steel.



ductile iron of 269 to 302 Bhn to achieve ultimate flame hardness.

For maximum wear, ductile irons should be ordered from the



TOUGH AND STRONG: Hammer tests failed to break ductile iron gear casting. Grade 120-90-02 is tough, wear resistant, yet easily machined.

foundry by hardness numbers. This is important. In any given grade of ductile iron, hardness may vary to such an extent that accurate wear

conditions and machinability can't be adequately measured, unless a hardness range is given.

In grade 80-60-03, the range of

hardness is 207 to 269 Bhn. To compare a 207 versus a 269 Bhn iron for machinability or wear resistance is questionable. For this reason a 30-point range makes it easier to compare results.

In the accompanying chart, the typical base analysis of 80-60-03 is 3.50 pct C, 2.50 pct Si and 0.30 pct Mn in the as-cast condition. Yet, the mechanical properties can be changed through heat treatment to provide hardness up to 58 Rc.

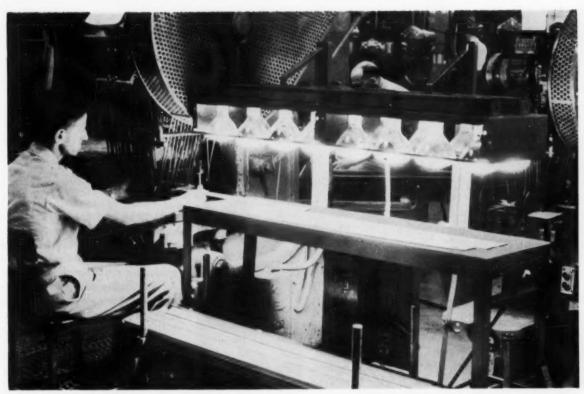
Resists High Shock—For maximum shock resistance and optimum machining qualities, grade 60-45-10 should be used. Most such castings are given a full anneal to relieve stresses and promote a fully ferritic structure. This grade sometimes is used in as-cast condition, particularly in heavy sections.

Typical properties of this grade after full anneal are 70,000 psi tensile and 50,000 psi yield strengths, 22 pct elongation and 179 Bhn.

Grade 80-60-03 is commonly used in the as-cast condition. However, it is usually stress relieved at 1050°F to remove internal stresses and provide machining stability. Its typical properties in the as-cast condition are 95,000 psi tensile and 70,000 psi yield strengths, 12 pct clongation and hardness of 240 Bhn.

Strong, Wear Resistant — For additional wear resistance and strength, use grades 100-70-03 and 120-90-02. The former is air quenched and tempered, while the latter is oil quenched and tempered. Hardness ranges are 241 to 269 and 269 to 302 for 100-70-03, and 269 to 302, 302 to 331, 331 to 363 and 363 to 368 for grade 120-90-02. The oil quenching grade is easier to use in aiming for a given hardness.

Prior to quenching ductile iron, it's good practice to quench and temper a test bar to see what the resulting hardness will be. This is important because slight variations in chemistry from heat to heat can affect the temper.



CUTS TRIAL-AND-ERROR: Fast adjusting of heat sources from both above and below insures proper punching.

Dual Preheat Aids Punching

Heat rules successful punching of laminated plastics.

That's why a new unit with double heat sources boosts production with better heat control.

Preheating from both above and below eliminates many difficulties in punching plastic laminate strips. A new heating table with dual heating produces just the right conditions to prevent cracks (strip too cool) or off-specification holes (too hot) in punching.

A hot plate heats the strip from below. At the same time, infrared lights focus on the strip from above to apply heat to the top side.

Fast Adjustment—Designed and built by Taylor Fibre Co., Norris-

town, Pa., the versatile table reduces adjustment time to reach ideal temperatures. Heat sources adjust quickly, operating either independently or in combination.

In addition to time savings, boost in punch press production runs as much as 70 pct with some grades. Savings in rejects are an added bonus.

Proper temperatures for hot punching depend on grade of the material, thickness, and closeness of holes to the edge and to each other. For much of the work, the hot plate, thermostatically controlled to \pm 5° over a 100° to 500°F range is quite satisfactory.

When to Use Lights—For thicker strip, or jobs where either the material or tightness of specifications make uniform, through heating critical, the lights supplement the hot plate. With thin stock, either one or both banks of lights heat both the work and the hot plate.

One bank adds about 100°F; both banks, 200°F. On the variety of work Taylor does, mostly phenolics, lights are used on about 15 to 20 pct of the jobs.

Wheeled for easy movement between presses, the table has a hand wheel for height adjustment. This permits matching of table height to different presses and die sets.

Since probably 80 pct of fabricator troubles in hot-punching stem, Taylor states, from heating problems, the firm frequently recommends the table to customers experiencing difficulties. The unit can be easily constructed by any fabricator from conventional materials.

Collector Handles Mill Scale On Continuous Basis

By J. A. Lowry-Sanitary Engineering Dept., The Jeffrey Mfg. Co., Columbus, O.

When a by-product flows out of a continuous process, it makes sense to avoid costly bottlenecks by setting up continuous handling.

A new collector designed for this purpose even provides for its own downtime.

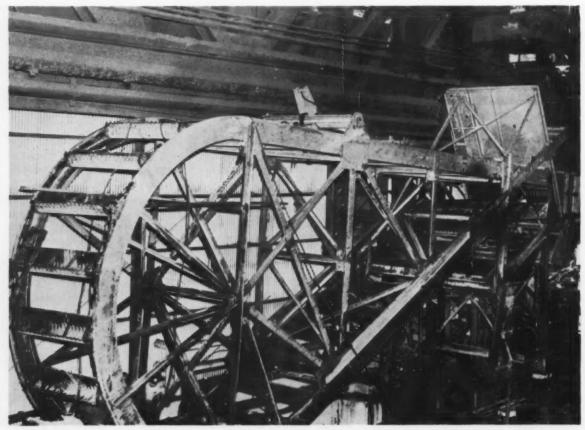
Handling and disposing of byproducts is often a headache. Steel mills, in particular, have the problem of what to do with mill scale from various plant processes. A major share comes from high-speed strip mills.

Since most states prevent dumping of such waste into receiving streams, facilities must be able to handle the output. Such a situation existed at a large steel mill in Ohio in handling scale coming from a scarfing machine.

Existing facilities for removing scale consisted of a deep pit in the mill building. Scale was flushed by plant water and removed from time to time with a clamshell on an overhead crane.

Bottleneck to Solve — During a modernization program, the company installed a new scarfer on the high-speed line. But the one crane needed for maintenance, roll changing and mill repairs, was tied up with the clamshell removing scale from the pit.

It took labor and plant personnel, other than maintenance crews, to handle the clamshell on and off the crane. This problem brought on



RAISED FROM PIT: Conveyor goes through inspection and servicing. Workers (lower left) indicate size.

a search for a more satisfactory method of removing mill scale on a continuous basis.

While most plants can put in duplicate facilities or at least standby systems, it wasn't possible here. Space was too limited. Better scale removing facilities would have to fit in the same location and pit area as existed previously.

Must Be Continuous—It called for a conveyor that would remove scale continuously and could be taken out of service, repaired and put back in the pit without shutting down the mill. The cost of shutting down is about \$100,000 a day, a prohibitive cost when caused by scale alone.

Taking these factors into account, engineers of The Jeffrey Mfg. Co. came up with a basic collecting system that ties up the crane for the shortest possible time. In addition it has enough excess capacity to overcome accumulation in the pit while the scale removal equipment is out for repairs.

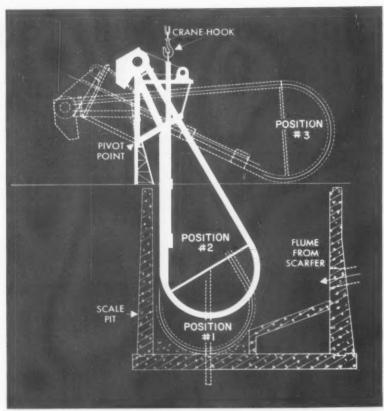
The system fits the existing space and discharges onto an existing belt conveyor. The conveyor feeds the cars that return scale to the ore stockpile for recharging in the blast furnaces.

Modify Pit — To fit the new scale collector, the bottom of the scale pit was modified to a semi-circular shape. The collector unit is designed with its bottom looking like an over-size trenching machine.

The whole conveyor is balanced so that as it is removed it can be lifted out by the crane with one hook and set on a post. With a second hook fastened, the unit can then be raised to a horizontal position out of the pit.

Total removal time from the pit to servicing location on the floor is about 15 minutes. The unit can be rechained in about one shift, the chain being assembled with coupling pins. With the conveyor frame open and accessible, repairs can be made very quickly.

Balanced to Dig-The conveyor, due to its balance point, remains



FAST SERVICING: One hook lifts conveyor from operating position No. 1 to position No. 2. Then second hook pivots unit to position No. 3.

vertical as it lowers into the pit. It has enough weight to dig itself through the scale which accumulates while conveyor is out of pit.

It digs down until it rests in its normal position on the bottom (from position No. 2 to position No. 1 in drawing). There it remains and operates until the conveyor is removed again for repairs.

In operation for about one year, the system records operating tonnages of between 12 and 15 tons an hour. Tie-up time on the crane has been reduced to a minimum.

Since installation, the unit has been out of the pit only two or three times. These were more for inspection than for specific repairs.

Perforated Buckets—Flume from the scarfer continually discharges into the pit. Perforated buckets equipped with manganese steel teeth pickup the scale.

Even with unit in position No.

3, there is no shutdown. The pivot point enables the conveyor to swivel up and out. The flume simply builds up an accumulation. When the servicing is completed the conveyor swivels down and digs to its position at the bottom of the pit.

Portability depends on the size of the crane. This particular scale collector weighs 35 tons. Since the crane capacity is well in excess of 40 tons, the unit is portable.

Can Be Profitable—A continuous system of this sort lends itself ideally to existing plants where room for pits and crane time are at a premium. The business of complying with state anti-pollution laws need not be a total loss.

The unit requires few personnel to operate. And there's the added bonus in that 12 to 15 tons an hour of scale can be conveniently reclaimed, instead of being discharged.

Step Cutter Mills Tough Jobs With Indexable Carbide Tips

Progressive "bites" with sets of throwaway carbide wafers let this tool cut faster, smoother and at less cost.

 A step-milling cutter studded with indexable carbide wafers promises to set new records for machining efficiency at the Army's Watervliet, N. Y., Arsenal.

First use of the new tool recently showed convincing proof of its costcutting ability. The job was a tough one, involving a cannon breech block made of AISI 4340 alloy steel. It called for milling a 5.65-in. diam semicircular groove in the block at a 45° angle.

Ordnance parlance calls this groove a "shell forcing angle." It formerly cost \$23.60 to mill each one. The new step cutter drives the cost down to just \$2.65.

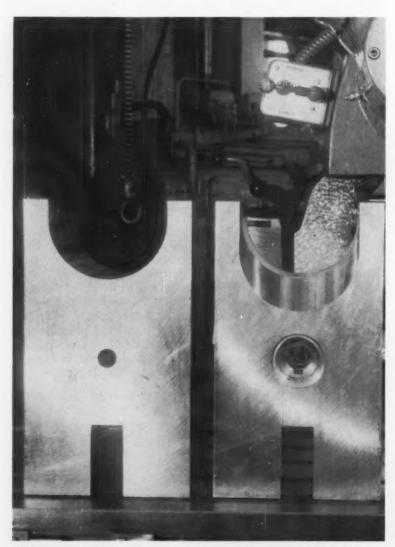
Slow Work—Fig. 1 shows how the angle used to be machined. It took nine passes with a brazed carbide-tipped shell mill. Actual cutting time was 30 minutes, but surface finishing with hand abrasive tools took another 10, as a rule.

The biggest cost factor in the old method was the one-time use of each shell mill. After nine passes a cutter would be extremely dull. Frequently it was damaged beyond repair. This not only led to poor surface finish on workpieces, it also meant a lot of machine downtime for tool changing.

Moreover, although used cutters could be diamond ground to a smaller diameter, these undersize tools could not be used again on the grooving operation. Thus a production run called for buying, storing, and handling a large supply of carbide tips and cutter bodies.

One Pass Does It—By contrast, Fig. 2 shows the new tool, also a cross-sectional view of a workpiece in which the step cut was interrupted. One pass of this cutter removes all the stock to produce an accurate, smoothly finished shell forcing angle.

As designed by project leader J. W. Rodd, of the Arsenal's Operations Engineering Branch, the cutter has eight carbide-wafer tips, each 9/16 in. square by 3/16 in. thick. They're ground on all four sides to within 0.001 in. tolerances, and positive mounting surfaces on the cutter body hold them within an angular tolerance of $\pm 1^{\circ}$. Tip corners are also ground to a precise radius of



HERE'S THE JOB: Large groove at top of partially machined breech block (left) must be machined further to form shell forcing angle (right).

3/64 in. for quick, accurate mounting and indexing.

The eight tips, set in four diametrically opposed pairs, cut four diameters simultaneously: 3.1875 in., 4.1875 in., 5.125 in., and 5.625 in. For the cutter to load progressively as it engages the work, the pair of tips forming the smallest diameter is set farthest forward along the cutter body's long axis.

Take Equal Bites—The remaining three pairs of tips are stepped down along this axis at ½ in. intervals. Each pair of tips removes about 25 pct of the stock. Total depth of cut is 1.437 in.

Tip wear is negligible, even after repeated machining cycles. However, indexing any wafer to bring a fresh cutting edge into position is a simple matter for the machine operator. The cutter body stays in place on the machine while this is done. Wafers are simply discarded when all cutting edges are worn.

This tool machines a shell forcing angle in just 15 minutes. And because it yields a surface finish between 20 and 30 microinches, rms (specifications only require 60), it eliminates all hand finishing.

Compare Tool Costs—Although these time gains are important, the most impressive savings show up by comparing tool costs of the old and new method. Arsenal officials peg the cost of the former shell milling cutter at \$41 each. Eight brazed carbide tips at \$1 each boost this to \$49. They estimate it would take 400 of these cutters at a total cost of \$19,600 to machine the shell forcing angles in 1000 blocks.

By contrast, one \$250 step cutter body and 200 carbide wafers at \$2 each would do the same 1000 workpieces, they say. Total cost for this assortment is only \$650.

Based on its success to date, Arsenal machining experts feel the new tool—or variations of it—will soon show comparable savings on many other workpieces. In particular, they recommend its use where complex shapes are now being produced by multiple face and slab milling operations.

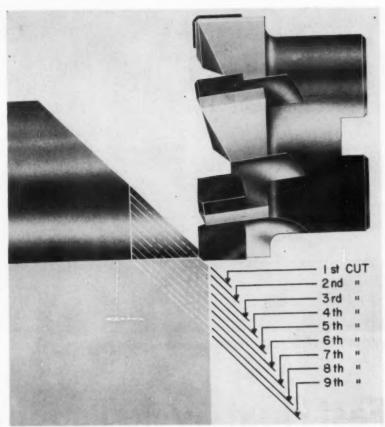


FIG. 1: Old method used shell mill with brazed carbide tips, took nine passes and 30 minutes to machine the shell forcing angle.

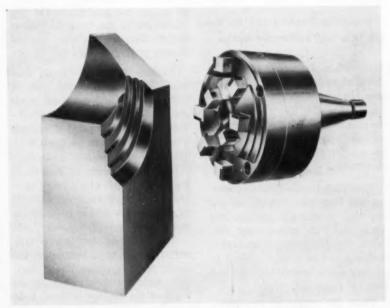


FIG. 2: New tool (right) uses four pairs of indexable carbide wafers to take cuts in 1/8 in. steps, finishes the angle in one 15-minute pass.



PRODUCTION SETUP: Operator places two pinions at a time on fixtures. Foot switch starts automatic cycle.

Fast Heat Cycle Toughens Pinions

Truck drive pinions depend on proper tempering to withstand the heavy stress they get.

Induction heaters can do the job in a fast automatic cycle.

■ Induction heaters temper the threaded ends of truck drive pinions. In operation for a year at Eaton Mfg. Co., the method does the tricky toughening job in minutes compared to over an hour needed for copper plating and lead bath tempering.

Uses High Heat—Induction heating had been tried before, but not put into production because the whole end was inadequately tempered. The new method uses higher temperatures for shorter periods to produce lower internal hardness and required toughness.

From an operating standpoint, induction heating is a welcome change. It replaces a 34-minute

copper plating cycle plus a messy lead bath temper.

Eaton also uses induction heating to temper the opposite end of the pinion where the roller bearing is staked. Here it eliminates another copper plating operation.

Uniform Results — Closely controlled induction heating gives a more uniform and consistent product. The pinions are made of high-hardenability carburizing alloy steel. Four different grades are used: 4817 H, 94B17 H, 4718, and 8620.

The setup consists of three heating stations, each with a timer, variable-radio transformer and variable capacitance. A 30-kw 10-kc motor generator set furnishes power.

There are six double-loop type inductor coils to accommodate the entire range of pinion thread sizes. Pneumatic fixtures, mounted on front of the heating stations, hold two drive pinions each.

Fits Many Sizes-Easily remov-

able pairs of supporting inserts fit the various sizes of pinions. The rear insert serves as a locating point at the back of the pinion head to position the pinion in the inductor coil.

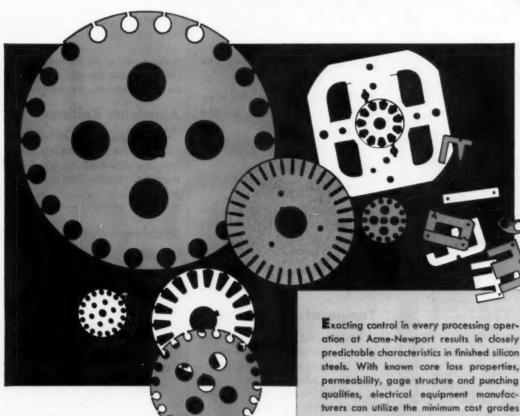
All three stations are electrically interlocked so that, while only one station can be heating at a time, the other two can be loaded and ready. Since the largest production falls into two coil sizes, normally two stations operate at once. The third station serves to cut coil setups.

From blast cleaning, the hardened drive pinions move to the induction heating area in wire baskets on a conveyor. The operator places the pinions two at a time in the fixtures.

Timed Cycle — A foot switch starts three timed steps: fixture moves the pinion end within the heating coil; pinion is heated for a period dependent on diameter of threaded end; fixture moves back so that pinion can be removed.

Acme-Newport

for Perfect Balance of Performance and Cost



ation at Acme-Newport results in closely predictable characteristics in finished silicon steels. With known core loss properties, permeability, gage structure and punching qualities, electrical equipment manufacturers can utilize the minimum cost grades that meet peak requirements for each application.

Steel to precise specifications has been the rule at Acme-Newport for 73 years. This basic steel producer's modern facilities, experienced personnel and convenient location are in excellent position to meet your particular steel requirements. Will you call us on your next order?

PRODUCTS OF ACME-NEWPORT STEEL

Hot Rolled Steel in Coil Hot Rolled Pickled Steel in Coil **Hot Rolled Sheets** Hot Rolled Pickled Sheets Cold Rolled Steel in Coil (full hard only) **Cold Rolled Sheets** Alloy Sheets and Plates Plates (5/16" and lighter) **Electrical Sheets** Electric Weld Line Pipe



A SUBSIDIARY OF







YOU CAN
SAVE TIME,
TROUBLE
AND COSTS
with

Formed Tubes...

*Save Time

We have a huge stock of dies and, when needed, tooling's fast. We also avoid delays by making our own electrically welded steel tubing, sizes from %" to 3" OD.

*Save Trouble

Long, active experience with all tube forming processes and high standards of quality control make sure your orders will be completed right.

*Save Costs

It's routine for formed tubes parts to deliver top performance, save weight, cut costs. Steel, copper, brass, aluminum or stainless tubing fabricated in 3/4" OD to 6" OD sizes; from 20 to 11 ga. metal.

Formed Tubes, Inc. 1106 Prairie, Sturgis, Michigan

Write for FREE Booklet



FREE TECHNICAL LITERATURE

New Catalogues And Bulletins

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, p. 117.

Truck Batteries

A 12-page bulletin details a line of truck batteries. It covers plate and cell construction, weights, sizes and tray arrangements for both rider and hand trucks. (C & D Batteries, Inc.)

For free copy circle No. 1 on postcard, p. 117

Temperature Control

A calibrated, dual switch temperature control for air, gas or hot plate applications is flexible in design. It can adapt to a great variety of uses. Literature gives details. (United Electric Controls Co.)

For free copy circle No. 2 on postcard, p. 117

Spring Firm

A 12-page pocket-size folder briefly tells the function of a company's 17 divisions, subsidiaries, and sales offices. (Associated Spring Corp.)

For free copy circle No. 3 on postcard, p. 117

Optical Gaging

In 144 pages, a catalog-handbook deals with optical gaging, chartgages and fixturing. (Optical Gaging Products, Inc.)

For free copy circle No. 4 on postcard, p. 117

Power Transformers

Preventive maintenance of power transformers through modernization

is discussed in an 8-page booklet. (Westinghouse Electric Corp.)
For free copy circle No. 5 on postcard, p. 117

Aluminum Railings

Advantages of aluminum alloy extrusions for aluminum bridge railings are discussed in an 8-page brochure. (Revere Copper & Brass, Inc.)

For free copy circle No. 6 on postcard, p. 117

Brazing

How the right brazing practice can save you money while producing better work is told in a 4-page newsletter. Several case histories point out advantages of various practices. (Handy & Harman).

For free copy circle No. 7 on postcard, p. 117

Furnaces

Heating, treating, processing, production and laboratory furnaces are briefly outlined in a bulletin. Two series of forced convection ovens for laboratory and production uses are also dealt with. (L & L Mfg.

For free copy circle No. 8 on postcard, p. 117

Tool Steels

Compared in a chart are carbon, alloy and high speed tool steels. It lists AISI types and brand names. The chart relates 43 brands. (Vulcan-Kidd Steel Div., H. K. Porter Co., Inc.)

For free copy circle No. 9 on postcard, p. 117

Limit Switches

Heavy-duty limit switches shown in a 12-page bulletin feature double pole, double throw, two normally open, two normally closed contact design. Their snap-lock action insures a quick-made and quick-break of contacts. (National Acme Co.) For free copy circle No. 10 on postcard, p. 117

Belt Sander

Its new 6 x 60-in. hand-stroke belt sander is introduced in a company's new catalog. Key sander features are: a machine-tool type base, anti-friction bearings, free-rolling work table, floating motor-mount and engineering for faster stock removal. (Boice-Crane Co.)

For free copy circle No. 11 on postcard, p. 117

Flow Meters

Described in a new bulletin are two new magnetic flow meters. Developed for 1/10 and 3/16-in. flow lines, they measure full scale flow rates as low as 0.1 gpm. (The Foxboro Co.)

For free copy circle No. 12 on postcard, p. 117

Power Capacitors

Corrosion-resistant 50 and 25 Kvar power capacitors featured in an 8-page brochure handle high-voltage applications. (General Electric Co.)

For free copy circle No. 13 on postcard, p. 117

Gundrills

Carbide gundrills outlined in a 4-page bulletin are for high-speed production of precision holes from solid stock. The catalog describes gundrills that produce accurate through-holes in cast iron, aluminum, bronze and some steel parts. (Star Cutter Co.)

For free copy circle No. 14 on postcard, p. 117

Generator Set

Highlights of new portable, lightweight generator sets are reviewed in a catalog. (Allis-Chalmers Mfg. Co.)

For free copy circle No. 15 on postcard, p. 117

Die Costs

Analyses of carbide lamination die performance and costs by a major die user show that using the right



IF you run down thousands of nuts every day, or just a few —

IF you use one size or several sizes of nuts -

IF you use hex, square, self-locking, castellated or any other kind of nuts —

IF you work with brass aluminum, stainless steel, monel, bronze, nickel alloy nuts, or any type of special fasteners —

IF you use manual or power tools, or even multiple units to run down nuts—

THEN

you can certainly use Apex standard or magnetic nut running tools specifically designed for your nut running work. For most applications, simply select the correct Apex tool from more than 5,000 stock types and sizes. For special applications, just ask Apex—the authority on fastening—for practical assistance in solving your problem.

Write, on your company letterhead please, for Catalog 30-A (tools up to %" drive), or Catalog 30-B (tools ¾" drive and larger).

1933 A Quarter Century of Service to Industry 1958



SQUARE

CASTELLATED

WING

PAL NUTS

ACORN

SELF-LOCKING

CONDUIT

LOCK

TOOLS FOR





NEED A LARGER PUMP?



We can supply you with larger type centrifugal pumps for pumping coolant, some acids, oils. These pumps can—

- Pump up to 400 gallons per minute, maximum
- Pump up to 90 foot head, maximum.
 Sealess and seal type pumps, immersed or flange mounted.

They are also adaptable for high temperatures up to 600° F. equipped with fan, lantern and non-friction grease seal for fumes, etc.

or smaller pumps too...

Don't forget that Ruthman has a complete line of smaller centrifugal pumps from 1/30 horsepower. Write for our complete catalog.

Have you a pump problem?

As specialists in the design and manufacture of Centrifugal Pumps, we are ready to help you with any *Centrifugal* pump problems. Just call on us any time.





MACHINERY CO.

- · COOLANT PUMPS
- · CIRCULATORS · AGITATORS
- . MOLTEN METAL PUMPS

1809-1823 Reading Road, Cincinnati 2, Ohio

FREE LITERATURE

material saves \$1331 per die over the next six best materials. A report gives details of the analyses. (Kennametal Inc.)

For free copy circle No. 16 on postcard, p. 117

Narrow-aisle Handling

Can you identify all popular styles of pallets? Do you know the labor saving advantages of unit load handling? Are you familiar with use of air rights and space saving benefits of narrow aisles in your warehouse? All these questions and many more are answered in a new 24-page handbook. (The Raymond Corp.)

For free copy circle No. 17 on postcard, p. 117

Presses, Controls

An 8-page catalog explains the function of two new manually controlled C-frame presses. (Hydraulic Press Mfg. Co.)

For free copy circle No. 18 on postcard, p. 117

Power Conveyors

Packaged power conveyor units in a new line of both stationary and portable design serve either horizontal or inclined conveying. A catalog describes the units. (Harry J. Ferguson Co.)

For free copy circle No. 19 on postcard, p. 117

Stick-on Tapes

A 4-page folder details a line of pressure-sensitive Teflon tapes and thermal curing pressure-sensitive Teflon tapes. These serve —100°F to 500°F electrical and mechanical applications. (Connecticut Hard Rubber Co.)

For free copy circle No. 20 on postcard, p. 117

Dispersions

How colloidal and semi-colloidal dispersions are making revolutionary advances in helping industry solve many problems is covered in a company publication. (Acheson Colloids Co.)

For free copy write-in No. 71 on postcard,



New Jessop TRU-WEAR-FM solid or clad plate is rolled from a special analysis steel designed for exceptional resistance to abrasive wear.

When compared with other steels in this category, it offers less distortion during heat treatment, and up to 10 times the wear resistance with equal impact strength. Fabricators of chutes, mold boxes, special-cutters and other applicable equipment should take note.

For additional information, write or call Jessop Steel Company at Washington, Pa. or any of the addresses shown below.

STEEL COMPANY - WASHINGTON, PA

OFFICES IN PRINCIPAL CITIES
of Substitutions Jessep Stool of Connels United, Wallacoburg, Tays
Stool Informational Corp., Chrysler Building, How York, How York
Groon River Stool Corporation, Owenshiere, Houseling

for special steel mill operations



Available in a wide range of sizes and speeds for warehouse and mill duty on ferrous and non-ferrous materials. Tell us your needs and we'll give you complete details.

No obligation.

Stamco, Inc., New Bremen, Ohio

FREE LITERATURE

Continued

These publications describe money-saving equipment and services . . . they are free with no obligation . . . just circle the number and mail the postcard.

Tape-run Drills

Tape-run and hydraulic-operated turret drills are presented in a 12page bulletin. It illustrates 6 and 8-spindle automatic models. Machines feature pre-select speed changes, depth control, and feed rate, for each spindle. Drilling and tapping capacities: 34 and 11/2-in. diam in steel. (Burg Tool Mfg. Co.)

Por free copy circle No. 21 on postcard

Noble Metals

Some 40 noble metal chemicals and catalysts are listed in new literature. (J. Bishop & Co. Platinum Works).

For free copy circle No. 22 on postcard

Toolroom Shaper

Illustrated literature describes an economical precision toolroom shaper. It's guaranteed for an accuracy of ±0.0004 for 6 in. (Jersey Mfg. Co.)

For free copy circle No. 28 on postcard

Silicon Nitride

Virtues of silicon nitride are discussed in an 8-page brochure. This material, it says, resists molten aluminum, other nonferrous metals. It resists chemical corrosion, retains strength above 2000°F, withstands repeated thermal shock. (Haynes Stellite Co.)

For free copy circle No. 24 on postcard

Foundry Handling

How a Michigan foundry uses a fleet of four fork trucks, some with attachments, to handle cores and castings is told in a 2-page report.

It explains procedures for moving cores from storage to pour, castings through heat treating, sprue lines, cleaning, trimming and storage. (Clark Equipment Co.)

For free copy circle No. 25 on postcard

Universal Tester

A multi-low-range universal tester is described in a 6-page folder. This small, compact motorized laboratory instrument quickly, accurately, and economically tests: tensile, compression, transverse and shear on any low-strength industrial material. (W. C. Dillon & Co.)

For free copy circle No. 26 on postcard

Thread Roller

A bulletin introduces a company's thread rolling attachments. Five sizes of thread rolling attachments are available for various size automatic screw machines and turret lathes. (Landis Machine Co.)

For free copy circle No. 27 on postcard

Ductile Iron

Most significant engineering and design features of ductile iron are summarized in a 6-page folder. (Hamilton Foundry & Machine Co.)

For free copy circle No. 28 on pestcard

Vacuum Melting

Data sheets cover vacuum meltting and high-temperature vacuummelted alloys. One alloy (precipitation hardening, nickel base) possesses high strength between 600° to 1800°F. (Metallurgical Products Dept., General Electric Co.)

For free copy circle No. 29 on postcard

Barrel Finishers

Barrel finishing machines described in a booklet come in 20 standard models. (Techline Div., Wheelabrator Corp.)

For free copy circle No. 30 on postcard

An iron-zinc phosphate process for rustproofing steel, zinc base diecastings, zinc and cadmium plate is described in a 4-page bulletin. Postcard valid 8 weeks only. After that use 11/20/58 own letterhead fully describing item wasted.

Circle numbers for Free Technical Literature or Information on New Equipment:

2	3	4	5	6	7		9	10
12	13	14	15	16	17	18	19	20
22	23	24	25	26	27	28	29	30
32	33	34	35	36	37	38	39	40
42	43	44	45	46	47	48	49	50
52	53	54	55	56	57	58	59	60
62	63	64	45	66	67	68	69	70
	12 22 32 42 52	12 13 22 23 32 33 42 43 52 53	12 13 14 22 23 24 32 33 34 42 43 44 52 53 54	12 13 14 15 22 23 24 25 32 33 34 35 42 43 44 45 52 53 54 55	12 13 14 15 16 22 23 24 25 26 32 33 34 35 36 42 43 44 45 46 52 53 54 55 56	12 13 14 15 16 17 22 23 24 25 26 27 32 33 34 35 36 37 42 43 44 45 46 47 52 53 54 55 56 57	12 13 14 15 16 17 18 22 23 24 25 26 27 28 32 33 34 35 36 37 38 42 43 44 45 46 47 48 52 53 54 55 56 57 58	2 3 4 5 6 7 8 9 12 13 14 15 16 17 18 19 22 23 24 25 26 27 28 29 32 33 34 35 36 37 38 39 42 43 44 45 46 47 48 49 52 53 54 55 56 57 58 59 62 63 64 65 66 67 68 69

If you want more details on products advertised in this issue fill in below:

Pag	•Product	*****************************
Pag	•Product	************************
Pag	Product	***************************************

PLEASE TYPE OR PRINT

Your	Nam	•	•••	***			 		 	*				÷					
Title							 		 	*			 *		 ,				
Com	рапу	****	***	• • •			 		* *		 *					* *	 	 *	
Co.	Addre	 188			e x		 * *	* *					 * 1			* *			
						* *	 		 		 	 			 *				

State

C Polled

> 4

-1 3

4 malled

ш

2

S Recessory

S

ш

z

3

=

postage S

FIRST CLASS PERMIT No. 36



Phosphating

S Z m S Village Station Post Office Box STAG In = 77 m 70 WILL 70 = 4 0 # UnHed 0 D States 70 q m PERMIT

Postcard valid 8 weeks only. After that use 11/20/58 own letterhead fully describing stem wanted, 11/20/58 Circle numbers for Free Technical Literature or Information on New Equipment:

T No. 3

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	10	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
		-							_

If you want more details on products advertised in this issue fill in below:

Page	Product	***********************
Page	Product	
Page	Product	***************************************

PLEASE TYPE OR PRINT

***************************************	***********	*********
Your Name		
*************************	***********	
Title		

Company		
*******************************	***********	*******
Co. Address		
************************	********	*********
City		Zone

State

FREE LITERATURE

Processed items may then be painted or finished with oil, wax or other type finishes. (MacDermid, Inc.)

For free copy circle No. 31 on postcard

Materials Handling

Equipment to solve various materials handling problems is presented in a 43-page handbook. Nearly 200 on-the-job photographs, detailed explanations and drawings point up many uses for conveyors and special - accessory equipment. (Rapids-Standard Co., Inc.)

For free copy circle No. 32 on postcard

Heat Treating

Temperature uniformity in heat treating furnaces is assured by a new combustion process, says an 8-page report. (Fort Pitt Bridge Works).

For free copy circle No. 23 on pestcard

Grating, Treads

Floor grating and stair treads in many styles and surfaces are outlined in a 16-page catalog. (Reliance Steel Products Co.)

For free copy circle No. 34 on postcard

Vibrating Conveyors

Vibrating conveyors for bulk materials are discussed in a 12-page publication. (Ajax Flexible Coupling Co., Inc.)

For free copy circle No. 35 on postcard

Gearshift Drive

An 8-page bulletin describes one maker's gearshift drives. (Lima Electric Motor Co.)

For free copy circle No. 36 on postcard

Chemical Analysis

Some 21 application sheets outline solutions to various chemical analysis problems. Laboratory apparatus discussed can help determine: sulfur in alumina ore, sulfur in fluorspar, ash and sulfur in coal

and coke, hydrogen in titanium and zirconium, oxygen in silver, copper and gold, etc. (Laboratory Equipment Corp.)

For free copy circle No. 37 on postcard

Grinders, Lappers

Precision grinding and lapping machines are detailed in a catalog. A 6 x 18-in. hydraulic surface grinder, a unitized transfer type crankpin grinder and a semiautomatic crankpin grinder are covered. (Norton Co.)

For free copy circle No. 38 on postcard

Sheet, Strip

A sheet and strip buyer's guide lists types available for prompt shipment in form of coils, stock sizes and cut-to-order sizes. Also covered is pre-painted steel in slit coils and flat sheets. (Joseph T. Ryerson & Son, Inc.)

For free copy circle No. 39 an pestcard

Colored Buildings

Colored steel buildings shown in a brochure are pre-engineered, have a factory-applied vinyl aluminum coat. This gives them a colorful metallic blue, green, rose, bronze, gray or white appearance. (Stran-Steel Corp.)

For free copy circle No. 46 on postcard

Valves

Valves for instrument piping and general use are outlined in a 4-page These valves combine catalog. unions, nipples, reducers, elbows, tees, valve and pressure bleeder valve in one space-saving unit. (Jerguson Gage & Valve Co.)

For free copy circle No. 41 on postcord

No-corrode Cement

Five standard corrosion - proof cements, each designed for a different resistance problem, are described in a bulletin. It points out that success of an acid-proof brick or tile construction is largely dependent on the proper jointing material. (Atlas Mineral Products Co.)

For free copy circle No. 42 on postcard



EVERY WEEK

... on the fostest publishing schedule in history brings you 11 complete busi-ness and technical services, unique in their unsurpassed en-the-job usefulness. Here are just four of them:

- NEWS OF INDUSTRY—research . . . laber . . . Washington . . raw materials . . . management . . . defense contracts.
- NEWS ANALYSIS . . . searching forecasts . . . fast-moving news and trends an vital changes as they affect your own problems.
- MARKETS AND PRICES—the steel outlook . . nonferrous markets . . iron and steel prices . . . every week.

every week.

TECHNICAL ARTICLES — everything new in metalworking in engineering and production ... how to cut costs ... technical advances.

Get valuable profit-making new ideas every week ... in The Iron Age, for 102 years the greatest magazine of metalworking.

TO PRESENT SUBSCRIBERS

This is a new subscription affer not a renewal notice. However, if you baven't already received the Metalworking Handbook check the renewal box on the card and we will send you the Handbook and extend your subscription.

FREE with YOUR subscription!

Enter your new Iron Age subscription now and get your personal copy of the METALWORKING HANDBOOK . FREE AND POSTPAID!

. the Metalworking Handbook, tab-indexed for easy reference contains 13 handbooks in one: a complete ENCYCLOPEDIA OF TERMS commonly used in metalworking . . . separate handbooks on the latest money-saving tech-niques for METAL CLEANING & TOOLING ... PLATING ...
TOOLING ... WELDING ...
INSPECTION ... MATERIALS
HANDLING ... STAINLESS

plus Iron Age's famous BASIC MARKET-ING DATA, a census of metalworking plants
..., a complete listing of TRADE ASSOCIATIONS ... the WELDING ROD & ELECTRODE CHARTS ... and the TOOL STEEL CHARTS!

NOW . . . by returning the card below, you can get the most useful and popular handbook ever printed for the metalworking industry.

The Metalworking Handbook is a collection of the most valuable and practical aids ever printed in Iron Age. It represents the "best of Iron Age" as selected by our editors, judging from the more than 300,000 requests for this material from our readers.

Our supply of the METALWORK-ING HANDBOOK is limited . . . act promptly and avoid delay - tear out the card below, fill in and mail right now.

FILL OUT POSTPAID FORM . . . MAIL TODAY!

The IRON AGE Chestnut & 56th Sts., Philo. 39, Po.

NAME

OKI Enter my subscription at \$5 for 52 weeks and send me FREE of CHARGE the new METALWORKING HANDBOOK.

POSITION COMPANY ADDRESS CITY ZONE STATE COMPANY NATURE OF BUSINESS

WHAT IS THE MAJOR PRODUCT MADE AT THIS PLANT?...

(Please Be Specific)

HOW MANY PLANT WORKERS EMPLOYED AT THIS PLANT?

FOR PROMPT SERVICE - DON'T DELAY - MAIL TODAY! ☐ NEW SUBSCRIPTION RENEWAL SUBSCRIPTION

FOREIGN RATES (1 year): Canada some as U.S., Latin America \$25, Other Fereign \$35

IMAGINE 13 HANDBOOKS FREE, PLUS IRON AGE FOR LESS THAN 10c A WEEK!

Enter your own personal subscription to THE IRON AGE for only \$5 for 52 weekly issues and receive free the METALWORKING HANDBOOK which gives you 13 Handbooks in Onel

- I. HANDBOOK OF TERMS
- 2. STEEL HANDBOOK
- 3. PLATING HANDBOOK
- 4. METAL CLEANING & FINISHING HANDBOOK
- 5. STAINLESS STEEL HANDBOOK
- 6. NEW PRODUCT IDEAS

- 7. TOOLING HANDBOOK
- 8. TOOL STEEL CHARTS
- 9. WELDING HANDBOOK
- 10. WELDING ROD & ELECTRODE CHARTS
- II. HOW TO GET LOWER COSTS
- 12. CENSUS OF METALWORKING PLANTS
- 13. TRADE ASSOCIATIONS

. . . the best from Iron Age, and only a small part of the mass of helpful suggestions and new ideas you will receive in a whole year (52 issues) of Iron Age itself. All available to you now for less than 10c a week . . . a piddling price that will be repaid many times over as you put these ideas to work saving time and money in your own operation.

COMPLETE THE HANDY ORDER FORM BELOW - TEAR OFF - AND MAIL TODAY!



BUSINESS REPLY CARD

First Class Permit No. 19,992, Philadelphia, Pa.

THE IRON AGE

CHESTNUT & 56th STREETS

PHILADELPHIA 39, PA.



FREE HANDBOOK
REPLY
FORM
ON REVERSE
SIDE
AND ENTER
YOUR
OWN
SUBSCRIPTION
TODAY

USE VALUABLE

Hoist Has Metal Powder Gears

Strength and shock resistance are musts for gears in hoists. Relatively small in size, they must withstand sudden stops and starts.

A hoist manufacturer finds metal powder gears meet all these requirements.

Powdered metal parts are finding increasing uses in tough industrial service. Material - handling equipment produced by Chisholm-Moore Hoist Div., Columbus Mc-Kinnon Chain Corp., Tonawanda, N. Y., is an example.

Involving heavy shock loads and steady and intermittent conditions of transmitted loading, the firm uses metal powder parts in transmission



This 11/2-lb metal powder hoist agar resists sudden shocks.

and brake mechanisms of a handoperated ratchet lever hoist and an electric chain hoist. Both meet a variety of severe operating conditions.

Rapid Starting, Stopping — The company's designers faced some problems with the electric chain hoist. With capacities from 1/8 to 1 ton, it demanded an extremely

small power "package." This had to be rugged enough to withstand shocks of rapid starting and stopping, bringing a full load from rest to 32 fpm (for the ½-ton model), then braking to zero speed.

For safety, the hoist has regenerative electric braking. Key component in the braking system is a metal powder brake hub. This part previously cost the user about 70 cents more per part. Metal powder's use now allows closer tolerances, better surface finish and improved mechanical properties, says the firm.

Takes Plenty Shock — Of iron powder, the hub is subject to substantial shock loads. After pressing from iron powder, this material is copper infiltrated. The final part is: Cu 15 to 25 pet; Fe 70 to 84 pet; combined C 0.6 to 1.0 pct. This alloy corresponds to SAE Type 7. It has a density of 7.1 to 7.6.

Brake hubs are heat treated in a carburizing salt bath at 1650°F. They're quenched in water, obtaining a Rockwell hardness of G 60 to 92.

Tensile strength is near 140,000 psi. Compressive strength is approximately 160,000 psi. In static torque tests, the hub and other load-sustaining members of the power train have withstood loads in excess of seven times the rated load without failure.

Want More Data?

You may secure additional information on any item briefed in this section by using the reply card on page 117. Just indicate the page on which it appears. Be sure to note exactly the information wanted.

Welding

Space-age joining cuts part cost

Metal-murdering heat inside aircraft engines is often quenched via special cooling turbines. Even these turbines, though, can be overworked by constant supersonic speeds, causing dangerous cracks and scars in fins and housings.

In a new engine, three cooling turbines reduce searing internal heat. Each turbine consists of a "nozzle box" or housing, a turbine wheel that generates the air flow, and a "cooling cap" which directs the air flow into engine hotspots.

Replacement Is High—Any damage usually affects the entire unit. Replacement cost can run to \$2300.



Welding operator carefully welds new fins into place.

Cooling cap costs some \$400; \$700, the nozzle box; \$1200, the turbine wheel.

It was these costs that spurred Norfolk Naval Station, Norfolk, Va., to search for an effective repair method. Requirements were tough. Special stainless-steel alloy fins are exceptionally delicate. These measure as low as 0.004-in. thick.

TECHNICAL BRIEFS

To perform efficiently, repaired housings, cooling caps, and turbine fins have to withstand 14,000-rpm vibration and 1750°F, plus.

Welding Meets Test—After other methods failed, Linde Co.'s Heliarc welding process was tested on a run of badly-damaged turbine units. Naval engineers knew this welding process could handle cracked cooling caps and worn nozzle boxes. Turbine wheels were the real barrier.

On each turbine wheel, damaged fins are first mechanically cut from the hub. The cut section is machined to a U-shape; it's ground to a satin finish. New fins are then attached to a special alloy base that's precision-shaped to the contour of the finished cut.

Uses Nickel Alloy—This piece then is welded in place with a Heliarc HW-10 torch and nickel-alloy welding wire. An extra-long electrode welds tiny, hard-to-reach areas.

Forming

Spring wire quality aids fabricator

Hospital bed springs receive the severest tests of all its spring products, says a large producer of such items. They are in use 24 hours a day; generally they must last 10 to 15 years or longer without replacement. Both comfort and rigidity are vital. So is ease of adjustment.

To build a spring unit meeting these conditions, National Steel Products Co., Huntington, W. Va., combines manufacturing skill with quality materials. In this company's experience, Jones & Laughlin Steel Corp.'s upholstery wire offers the necessary uniform tensile strength and chemical analysis.

Bounce Back Readily—Illustrating finished quality of such units is a shipment of innersprings. Crated for 10 years in normal shipping position, some 20 innerspring mattress units were compressed absolutely flat. When uncrated finally, the springs bounced back with strength, resiliency and other qualities of newly-manufactured springs.

In manufacture, coiling is the first major operation. Wire is predominantly 13 and 13½ gage for innersprings; for box springs it's 10½ and 11 gage.

Uniform tensile strength is critical in this operation. Wire bundles must unreel smoothly into automatic spring coiling machines. Too soft wire on these units exerts less pressure against the forming pin. This makes too small a center for the coil. Too hard wire exerts more pressure against the forming pin. This means too large a center. In both cases, it's impossible to hold coils to correct size.

Uniform physical properties of the wire is vital in the next operation. This is heat treating to stressrelieve the coils.





IT'S HUMAN EMOTION . . NOT MECHANICAL MOTION

... that can present a site-selection problem. Equipment is not affected by community attitude, but personnel is! Your people and their families must be happy in the new surroundings if employee efficiency is to be maintained.

THE HUMAN SIDE OF PLANT LOCATION:

This is where the Carolinas excel. Genuine warmth and friendliness are natural resources. Newcomers know they are welcome right from the beginning.

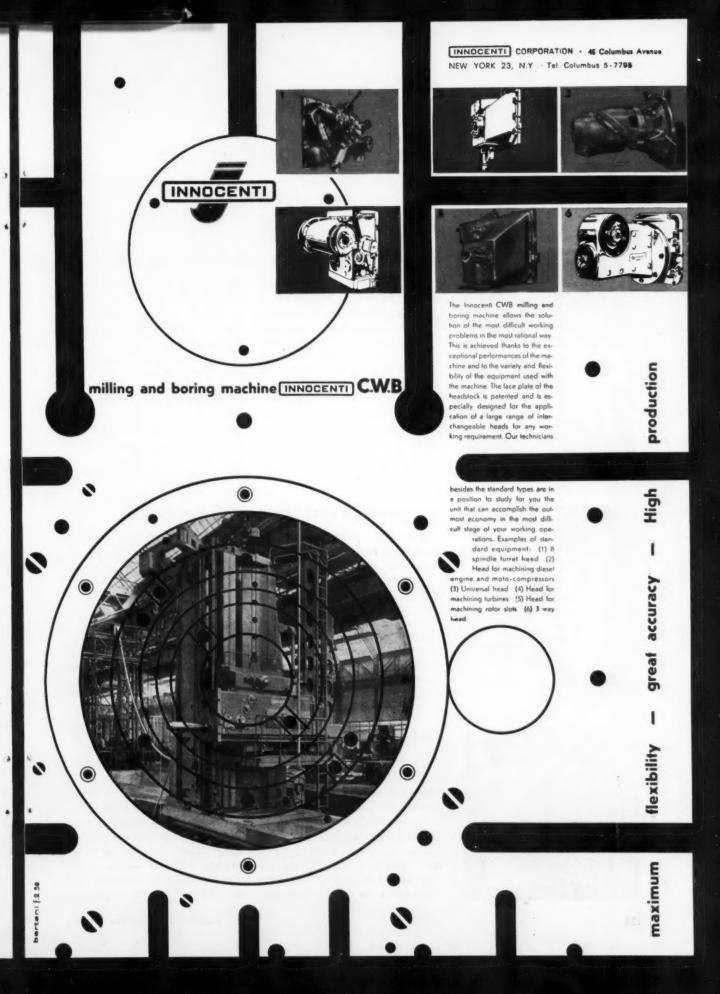


The same attitude is reflected in a newly modernized corporate tax structure.

Certainly in this industrial climate a plant and its personnel will take root rapidly and grow happily.

CAROLINA POWER & LIGHT COMPANY

We invite you to use our plant location services in confidence and without obligation. Contact D. E. Stewart, Mgr., Area Development Dept., Raleigh, N. C. TEmple 2-4611.



New Production Ideas

Equipment, Methods and Services



Bloom Reheat Furnace Eliminates Handling

Key feature of this bloom reheating furnace is elimination of costly handling of hot steel by mechanical manipulators. Consisting of nine barrel-type units, the furnace line forms an integral part of a conveyor system between a blooming mill and rail mill. Capable of reheating blooms at 198-tonper-hour rates, the furnace heats only 9½ tons of steel at any one time. It reheats blooms from 8 to 11-in. sq in cross-section, 8 to 22-ft long, weighing 1744 to 9050-lb

each. The line releases blooms automatically at a signal from the rail mill operator. It accepts a cool bloom whenever space is available. Reheating time is down to 3 minutes in many cases (instead of 60 or 90 in some installations). This means less scale formation. It occupies just 63 x 11 ft floor space. Operation is automatic; only casual supervision of recording equipment is necessary. (Selas Corp. of America).

For more data circle No. 50 on postcard, p. 117

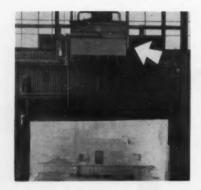


Air-powered Tool Staples Quickly, Easily

Two major stapling tool improvements team-up in a new development. These include: (1) air return, and (2) a high-speed piston. The result is a stapler that meets high performance, rapid stapling demands of its user. Pneumatically operated, the stapler's jet-driven air return delivers positive high speed action. It also extends tool life, says the manufacturer. A reason for this is elimination of many parts sub-

ject to failure. By doing away with these parts, maintenance costs are down; so are production delays caused by staplers out of service. A high-speed nylon piston drives staples. A light touch is all the operator need apply; the tool does most of the work. Stapler takes wide and narrow crown staples in 3/16 to 3/4-in. leg lengths. (Paslode Co.)

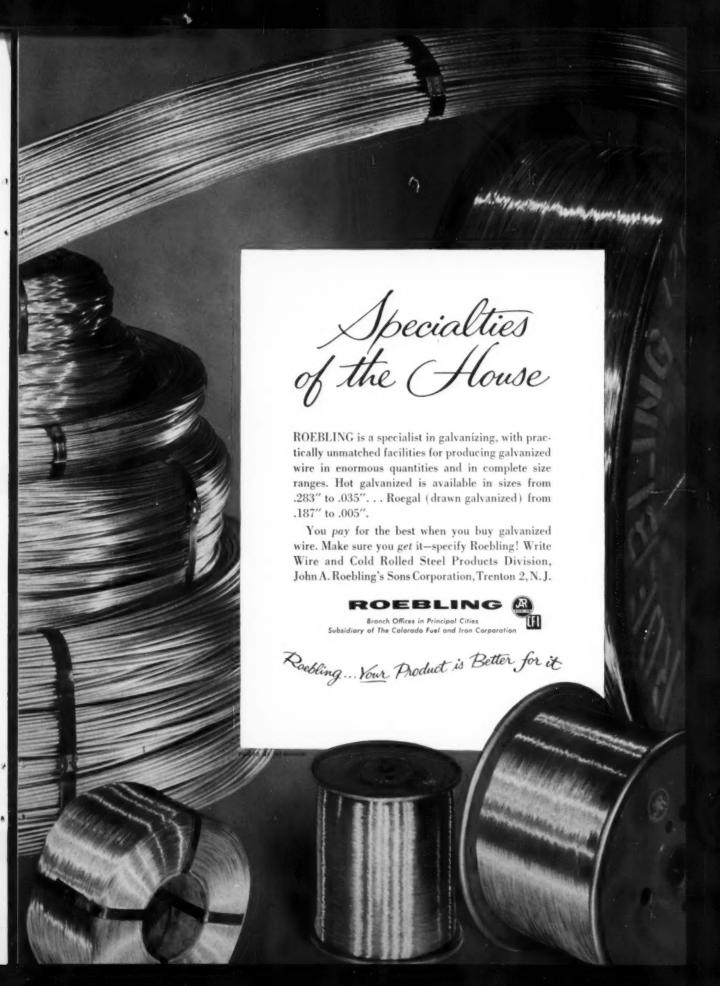
For more data circle No. 51 on postcard, p. 117

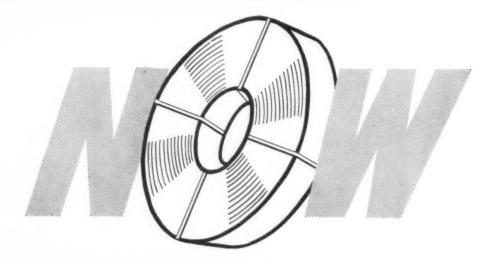


Hot Air Acts As Plant's Loading Dock Door

Factories, warehouses and similar installations with large, frequently open doors are faced with two wintertime problems: (1) uncomfortable workers; (2) hazardous working conditions. But these problems just don't exist when a new "hot air door" goes into use. For use in shipping and receiving departments where doors are often open to re-

ceive railroad freight cars or highway trucks, the "hot air door" mounts overhead of the doorway. Electrically hooked-up to the door control, it goes on when the door opens. The heater curtains off wintry blasts, filtering warm air through cold air which would otherwise blow in. Keeping cold out, the heater lets employees,





CHASE IS ROLLING SHEET ALUMINUM

... and Chase as your aluminum source gives you all these advantages!

LONG EXPERIENCE – For years Chase has been rolling aluminum for special applications, along with other metals, giving Chase unrivalled non-ferrous metals experience...82 years working with metals!

LATEST EQUIPMENT for quality production and exacting production techniques assure close tolerance controls required in narrow-width rolling of aluminum for use in fin stock, in deep drawing, and spinning and in eyelet parts.

HUGE STOCKS of semi-finished aluminum at Chase Cleveland and Waterbury mills assure you quick delivery of coiled sheet to meet your exact needs.

DEPENDABLE SUPPLY - because Chase can draw on unlimited stocks of raw metal.

Talk over your requirements with your Chase District Office, or write Chase, Waterbury 20, Connecticut.

From 1/2" to 18" width in 90 to 110 lb./inch coils

Mill Stocks of These 6 Alloys On Hand In Waterbury and Cleveland Mean Quick Service

1100 3003 3004 5005 5050 5052 Chase

RASS & COPPER CO

Subsidiary of

Kennecott Copper Corporation

THE NATION'S HEADQUARTERS FOR ALUMINUM . BRASS . BRONZE . COPPER . STAINLESS STEEL

Atlanta Baltimore Boston Charlotte Chicago Cincinnati Cleveland Dallas Denver Detroit Grand Rapids Houston Indianapolis Kansas City, Mo. Los Angeles Milwaukee Minneapolis Newark New Orleans New York (Maspeth, L. 1.) Philadelphia Pittsburgh Providence Rochester St. Louis San Francisco Seattle Waterbury

NEW EQUIPMENT

equipment and stock inside stay warm. Working hazards often are reduced, too. The heater is only in use while the door is open; a thermostatic control turns it off when the door is shut. (L. J. Wing Mfg. Co.)

For more data circle No. 52 on postcard, p. 117

Low-Sludge Anode

Recessed surfaces are relatively easy and inexpensive to nickel-plate with anodes cast of a new lowsludge alloy. This material corrodes evenly, producing little metallic and carbon sediment. With it, anode bags are unnecessary. An exceptionally smooth finish resulted in test applications. The anode's developers believe they will find uses as auxiliary anodes for plating bright nickel areas of low current density. Automotive design offers opportunities in this category in the form of surfaces that cannot be given a thick coating of bright nickel by conventional processes. The anodes also may enable appliance manufacturers to solve plating problems where it's not feasible to use anode bags. (Hanson-Van Winkle-Munning Co.)

Tape-run Drill

Especially for small-lot jobs is a new tape-run, turret drilling machine. Directed by a General Electric pre-engineered two-motion numerical positioning control, the six-spindle drill handles 95 pct of all basic drilling requirements with up to ¾-in. diam tools in mild steel. Test runs on job lots of from one to 427 parts have resulted in savings ranging from 32 to 95 pct. (Burg Tool Mfg. Co.)

For more data circle No. 53 on postcard, p. 117

For more data circle No. 54 on postcard, p. 117

Stock Reel

For high-speed press room use, a new self-centering double stock reel loads on one side while the other side unwinds. This increases reel productivity. When one side has unwound, the reel easily unlocks, swings about. The new coil is then in place ready for use. This heavyduty unit comes with either magnetic brakes or standard friction drag brakes. Capacity of a small model is 10-in. wide, on a maximum coil OD of 44 in., up to 500 lb on each side. A large model takes coils up to 1000 lb on each side with maximum OD of 48 in., 13-in. wide stock. Both units have a self centering core from 6-in, minimum up to 24-in. maximum. (Durant Tool Co.)

For more data circle No. 55 on postcard, p. 117

Lapping Machine

A new crankshaft lapping machine produces fine surface finishes using coated abrasive strips. It laps pins and bearings simultaneously in an automatic cycle to low microinch readings. Although developed to finish crankshafts, the machine can also finish other parts. Base of loading and unloading is one of the special advantages of the lapper. Head and foot stocks are carried



on a swing frame mechanism. This swings the head and foot stock out at hand-high level to the operator; this avoids need for strain or reaching, an important consideration when handling relatively heavy parts, like crankshafts. When the operator has placed the crankshaft in convenient vee-blocks between the head and footstock, he merely

touches a pushbutton and the machine takes over. (Norton Co.)

For more data circle No. 56 on postcard, p. 117

Countersink

Fully adjustable, a new micrometer-stop countersink is fast cutting. The lightweight hand tool can also perform volume production work on drill presses, lathes, milling machines or wherever chucking is available. It features a hardened and cylindrically ground steel alloy shaft operating within an extra large self-lubricating bearing. Rapid adjustment for depth of cut is made by retracting the thimble and rotating to any desired position. When released, precise machine cut serrations provide positive locking. Final cut is accurate to ± 0.001 in. Sizes run from 3/8 to 11/2 in. in five standard angles. (Schrillo Aero Tool Engineering Co.)

For more data circle No. 57 on postcard, p. 117

Welding Machine

For welding jobs that come within the 20- to 180-amp range, a new economical, rugged ac machine has 16 steps of heat. Its high open circuit of 65-v permits use of low hydrogen and stainless steel electrodes up to 3/16 in. Power supply is 230 v, 50/60 cycle, single phase. Full load input is 37 amp. It meets all NEMA and REA specifications. (Harnischfeger Corp.)

For more data circle No. 58 on postcard, p. 117

Iron Powder Electrode

A new electrode easily, economically welds 12 to 14-pct manganese steels. It's suitable for building-up manganese steel hard-surfacing deposits on either manganese or carbon steels and also for making sound joints between two manganese steel parts or between manganese and carbon steel parts. A low hydrogen, iron powder electrode, it has high deposit rates, smooth beads and a steady arc. It's used with both ac and dc weld-

How to produce low alloy welds to resist tons of torture





WELD WITH

FIRCOS



LOW ALLOY ELECTRODES

This 22½ ton armored personnel carrier proves an important point. When working with hard-to-weld low-alloy plate, and welds must be extra strong and tough in the "as welded" condition, it pays to use the highest quality weld metal available. In this case, Arcos Tensilend 100, a low hydrogen coated electrode produced weld metal that matched the physical and chemical properties of the base metal. In addition, it did the job with less nickel than the 19-9 modified electrode formerly used. There was no preheat, no postheat... and complete freedom from cracking. ARCOS CORPORATION, 1500 S. 50th St., Philadelphia 43, Pa.



NEW EQUIPMENT

ing machines. Available in 5/32, 3/16, and ¼-in. sizes, each ¼-in. electrode covers 9-sq-in. with a deposit ½-in. thick. (Lincoln Electric Co.)

For more data circle No. 59 on postcard, p. 117

Spotfacers

Reverse countersinks and spotfacers, formerly available in high speed steel, now come in carbide. Stocked as standard tools, the carbide-tipped reverse countersinks and spotfacers are for use on hard, difficult-to-machine materials. Sizes range from ½ to 1½ in. Sizes ¼ through ½ in. are solid carbide. (Craig Tools, Inc.)

For more data circle No. 60 on postcard, p. 117

Aluminum

Plating chromium directly to aluminum and its alloys is possible with a new process. It needs no intermediate metallic deposition of copper, nickel or zincate. Affording a strong bond between the two metals, it eliminates possibility of galvanic action. The process also prevents undesirable electrolytic couples. The chromium coating is ductile enough to withstand chipping, peeling, cracking and flaking. Compressive and sheering stress tests indicate a flow of the coating with the basic metal, instead of a spalling action. (Service Hard-Chromium Co.)

For more data circle No. 61 on postcard, p. 117

Numerical Control

A numerical control system just developed automatically prepares control tapes for two- and three-dimensional contour machining. It handles parts composed of straight lines, arcs, circles and free form or point defined curves. It takes dimensional and machining data from engineering drawings and produces a coded punched control tape for direct control of machine tools. This system can prepare machine

control tapes for working intricate three-dimensional parts containing pockets, flanges, tapers, contours and grooves. Such parts include turbine blades, intricate cams, molds, forging and stamping dies, templates, integral panels, forged fittings, etc. (Bendix Industrial Control Section)

For more data circle No. 62 on postcard, p. 117

Testing Machine

Exerting some 400,000 lb of tension or compression on metal specimens, parts or structures, this new testing machine comes in two sections. First is a press section weighing 19,000 lb the other is a 2000-lb control console. The latter contains electric motor-driven hydraulic pumps, control components and an indicator dial. Tension and compression tests can be done in the same testing area due to the unit's design. This eliminates mov-

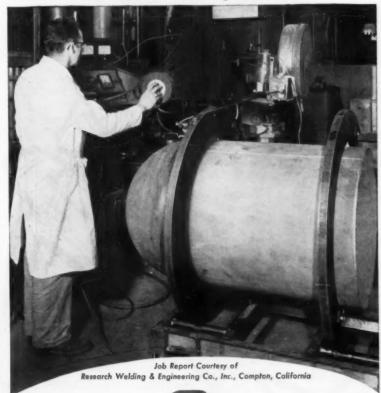


ing specimens or parts from one place on the machine to another. (Tatnall Measuring Systems Co.) For more data circle No. 63 on postcard, p. 117

Fire-fighting Truck

A low-lift platform truck serves a materials handling firm both as a production tool and a piece of mobile fire fighting equipment. Key to the system is a fire fighting unit mounted on a skid. Costing about \$400 to build and equip, the unit was built for the company's own use. It carries carbon dioxide and

For flawless high strength weld metal in missile components



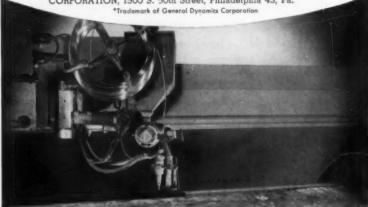
WELD WITH





CHROMENAR Spooled Wire

Light weight was important in this welded missile component that was required to hold air under 3,000 p.s.i. pressure. After making the root pass weld with the Arcos EB* consumable insert, the weld was completed by submerged arc welding with Arcos CHROMENAR CMV welding quality wire. CHROMENAR CMV was selected because its weld metal could be heat treated to match the base metal with tensile strength in excess of 200,000 p.s.i. and pass x-ray inspection. For help on your welding problems consult... ARCOS CORPORATION, 1500 S. 50th Street, Philadelphia 43, Pa.





... and it costs less in the long run!

ELECTROMANGANESE® Foote's electrolytic manganese is guaranteed 99 95/100% pure. Available in 250- and 500-pound steel drums, and in 2000-pound pallet boxes. Can also be purchased in a special Hydrogen-Removed Grade (H/7.5 ppm) and special Nitrided Grades (Nitrelmang®). Write for Technical Data Bulletin 201 and price list. Address request to Technical Literature Section, 438 Eighteen West Chelten Building, Philadelphia 44, Pa.



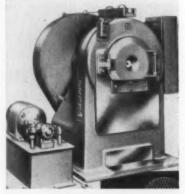
NEW EQUIPMENT

dry chemical fire fighting systems as well as a small tank of water and auxiliary hose for connection to local outlets. In case of emergency, the low-lift platform truck picks up the skid and carries it rapidly where it's needed. The truck is a standard 66-in. platform unit with a 24-v. electrical system. Speed is up to 10 mph. The maker doesn't supply the firefighting unit or the equipment which it carries, just the truck. (Yale & Towne Mfg. Co.)

For more data circle No. 64 on postcard, p. 117

Metal Formers

A leading metal-forming equipment producer has announced a new application of its hydraulicaction formers. This is the precision attaching of ball fittings to parking brake cables for automobiles. Two



of these machines are already in satisfactory operation. The setup is actually a modification of a rotary swaging machine. The modification is a spindle mechanism which allows wide opening of the dies; this permits swaging between shoulders. (Fenn Mfg. Co.)

For more data circle No. 65 on postcard, p. 117

Ore-test Furnace

A new furnace determines compression strength of coke and ore pellets at high temperatures. It accurately predicts strength of coke at temperatures encountered in the tuyere zone or high temperature zone adjacent to it. The furnace heating zone consists of a hollow silicone carbide tube. An automatic indicating or recording pyrometer controls and determines temperature. Coke or ore sample to be tested is cut to predetermined size and placed on a pedestal within the tube. The furnace is brought to 3000°F, under a nitrogen atmosphere; increasing pressure applies to the sample through a counterbalanced pressure rod until the sample collapses. Pressure applies by either a hydraulic mechanism which records weight, or by adding lead shot to a container on a lever arm. (Hevi-Duty Electric Co.) For more data circle No. 66 on postcard, p. 117

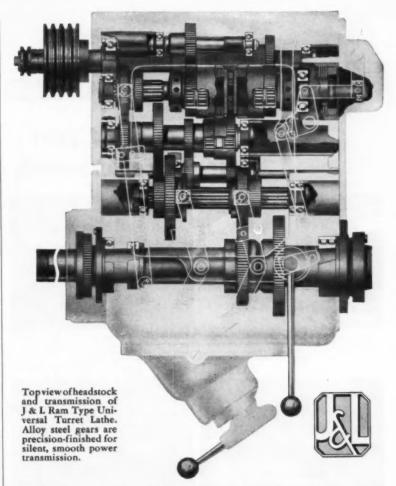
Teflon Material

New blended plastic material uses DuPont's Teflon. It puts inorganic additives with the fluorocarbon resin base to achieve some fine physical characteristics. The material boasts exceptional resistance to deformation under load. Resistance to wear is extremely high. Compressive strength and stiffness are also very good. The material handles easily on the production line. The additives do not lower Teflon's desirable physical characteristics, such as lubricity and chemical inertness. (Modern Industrial Plastics, Inc.)

For more data circle No. 67 on postcard, p. 117

Propulsion Unit

Self-contained, a new electric propulsion unit provides drive, brake and steering functions for any mobile device. It drives any wheeled or castered unit up to 3000-lb gross vehicle weight. It comes in two models: one is complete with battery, battery box and cables; the other is for devices which have a battery-powered 12-v system. The unit has a centrifugal clutch which provides smooth acceleration. Fluid drive is optional. Jogging the motor switch provides precise speed regulation for both forward and reverse close-quarter maneuvering. The brake operates via the steering handle. Moving the handle into a vertical position ap-



Perkins Gears Used by Jones & Lamson

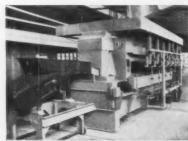
Jones & Lamson Machine Company, famous as manufacturers of the world's most accurate and powerful turret lathes, use Perkins precision gears for efficient, dependable performance. Perkins custom-cut gears are precision-made to exact specifications. They eliminate wear, noise and backlash. Our OEM customers know Perkins means dependable service and longer gear life. Perkins' long experience in producing precision gears could bring profitable benefits your way, too! Ask our engineers to work with you designing or estimating your next gear order.

WRITE TODAY for folder showing bevel, spiral, helical and spur gears; ratchets, sprockets and ground-thread worms; face gears, generated and curvic clutches; made by Perkins in many sizes from all materials.

Perkins Ma	CDINE (O Gen	Co.,	r 631 31	pr angja	E 900 9 2 7 X 400 1
Name						
Company_						
Address						



FURNACES Built to meet your specific requirements



EF gas fired radiant tube combination hardening and dry cyaniding furnace with automatic feeder that distributes parts evenly on conveyor; and a dual oil, water quench



Tubing, strip, rod and wire in coils, strands or on reels are being uniformly processed in hundreds of EF continuous and batch type furnace installations.



Charging end of EF special atmosphere bulkhead pusher furnace; bright anneals copper and copperweld wire and clean anneals brass wire. Capacity 4000 lbs. per hour.



EF gas fired unit—bright anneals wide or narrow strip in single or multiple strands. Other continuous and batch types for ferrous or non-ferrous, including stainless.

Reflecting more than 40 years of continuous research and experience, and thousands of successful gas fired, oil fired and electric installations, EF engineers are in position to design, build and install the exact size and type of equipment you need for any product, any hourly output and any heat treating or heat processing requirement. Furnished complete with special atmosphere equipment and material handling facilities, synchronized and coordinated with your production schedules.

To assure high heating efficiency, low maintenance, high hourly outputs and uniformity of finished product, take advantage of the wide experience and complete service offered by EF's experienced heat processing engineers—You'll find it pays.



BULLETIN No. 461

shows typical installations of EF Gasfired, Oil-fired and Electric Furnaces. Send for a copy today!



Canadian Associates • CANEFCO, LIMITED • Teronte 13, Canada



NEW EQUIPMENT

plies the brake. The handle automatically moves into brake position when released. Forward and reverse push-button controls are located on the steering handle for ready accessibility. (Vanguard Engineering Co.)

For more data circle No. 68 on postcard, p. 117

Box Furnace

A new high-temperature atmosphere box furnace provides heavy, continous duty at all heat levels up to 2500°F. It also handles short or intermittent runs to 2700°F. Heating elements are of non-metallic silicon carbide. This compact



unit, with a clear working area 6-in. wide x 12-in. deep x 5-in. high, comes complete with all components pre-wired and piped. The furnace chamber is protected by an automatic flame curtain which ignites when the furnace door begins to open. (Lindberg Engineering Co.)

For more data circle No. 69 on postcard, p. 117

Pumps Almost Anything

Ever try pumping broken glass, rags and pebbles? These pump-killers aren't recommended for any test procedure, but a pump is available that will successfully handle them. It's done by a "progressing cavity" pump. This works similar to a precision screw conveyor. It has proven ability to handle substances of high viscosity with solids

in suspension in a test installation with a rotor being turned at 310 to 620-rpm by a 7½-hp motor. Even with some rags wrapped around the rotor, desired discharge rate of 80 to 160-gpm, was met. Uniform discharge and constant pressure actually prohibits grease build-up. (Robbins & Myers, Inc.) For more data circle No. 70 on postcard, p. 117

NEW BOOKS

"The Metal Thorium" contains 22 chapters by 36 experts. It places dual emphasis on practical engineering problems and techniques, and theory and research. Thorium is considered both energy source and metal. 397pp. \$10 per copy. American Society for Metals, Book Dept., 7301 Euclid Ave., Cleveland 3, Ohio.

"Battery Engineering Manual" is a comprehensive review on the selection of dry-cell batteries. Its publisher is a maker of 3000 different types of dry cells, from 1½ to 510-v, including numerous special and unusual types. 100pp. \$1 per copy (free to designers of battery-powered equipment). Burgess Battery Co., Freeport, Ill.

"Product Directory of the Refractories Industry" lists 2700 refractory brands of 185 manufacturers. \$3 per copy (add 3-pet sales tax if in Pennsylvania). Refractories Institute, First National Bank Bldg., Pittsburgh 22, Pa.

"Terms & Definitions for the Weighing Industry" contains 1170 terms pecular to scales and weighing. \$1 per copy. Scale Mfrs. Assn., One Thomas Circle, Washington 5, D. C. (also available from scale manufacturers).

"Automobile Engine Rebuilding & Maintenance" is an on-the-job training book. 445pp. \$7.95 per copy. Chilton Co., Book Div., 56th & Chestnut Sts., Philadelphia 39, Pa.



answers many questions that mean better production, more profit for you. Just look at the table of contents:

Tank cleaning methods Machine cleaning methods Electrocleaning steel Paint stripping Electrocleaning nonferrous metals Steam-detergent cleaning Pickling, deoxidizing, bright dipping Barrel finishing, burnishing Applying iron phosphate coatings Better cleaning in hard water in preparation for pointing oregs Applying zinc phosphate coatings Treating wash water in paint spray booths Cleaning removing rust and Rust prevention conditioning for painting in one operation Machining and grinding

FREE Write for your copy of this 44-page illustrated booklet.



NEW LEADED STEELS FROM RYERSON

Now, machine parts faster than ever before

NEW LEDLOY 170 TUBING

average machining speed 170 surface feet per minute

Here's the fastest-machining steel tubing ever produced—and only Ryerson has it available for immediate shipment from stock. Ledloy® 170 is a cold drawn, seamless product of low carbon analysis with .15% to .35% lead added. It promises a minimum increase of 25% in productivity of machined parts or components. Sizes range from 1" to $2\frac{1}{2}$ " O.D. with maximum $\frac{3}{2}$ " wall thickness. Other sizes can be supplied promptly.



NEW LEDLOY 375 BARS

average machining speed 375 surface feet per minute

This newest addition to Ryerson free-machining screw steel stocks is the world's fastest-machining steel. Assigning the figure 100 to B-1112 and using this as a base, Ledloy 375 has a machinability index of 205 plus. It rates about 64% higher than B-1113 and about 20% higher than Ledloy 300.

Ledloy 375 bars presently in Ryerson stocks include rounds in sizes from ¼" to 1", hexagons ¼" to ½".

Ask your Ryerson representative for complete details on these new steels. And call Ryerson for an unequaled selection of cold finished bars and tubing, including the largest stocks of Ledloy 300 (also known as Ledloy A) and Rycut® leaded alloys—the fastest machining in their carbon ranges.

MACHINING COMPARISON* Ledloy 170 Tubing vs. Nonleaded Tubing

	Ledloy	170	MT-1015			
	Speeds	Feeds	Speeds	Feeds		
Center drill	172 s.f.m.	.005"	110 s.f.m.	.005"		
Form tool	172 s.f.m.	.0008"	110 s.f.m.	.0008"		
Boring tool	172 s.f.m.	.007"	110 s.f.m.	.007"		
Cutoff	172 s.f.m.	.0013"	110 s.f.m.	.0013"		
Thread	27 s.f.m.	-	20 s.f.m.	-		
Тар	18 s.f.m.	-	12 s.f.m.	-		
Production time	35 seconds		49 seconds			



RYERSON STEEL

Member of the Steel Family

Principal Products: Carbon, alloy and stainless steel — bars, structurals, plates, sheets, tubing — aluminum, industrial plastics, metalworking machinery, etc.

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • WALLINGFORD, CONN. • PHILADELPHIA • CHARLOTTE • CINCINNATI • CLEVELAND

DETROIT • PITTSBURGH • BUFFALO • INDIANAPOLIS • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

The Iron Age Summary

Mills Fight Hard for Business

Competition for orders is the fiercest in years. Extra freight absorption is commonplace.

Still, the mills are bullish on the outlook, look for better times beginning in first quarter.

• Steel mills are fighting toothand-nail for orders. The current competitive situation in steel is the fiercest in years. The pickup in orders from the recession low of last spring and summer has helped, but not enough to relieve the pressure on the sales staffs.

Some steel companies, in order to get into the lucrative business in the Midwest and the Greater Chicago district, are absorbing more freight charges than they ordinarily would. This cuts down their margin of profit, but helps keep their mills operating.

Favor Low-Cost Plants — Also, some mills are shifting orders, where possible, to their more modern, lower-cost plants and shipping long distances, actually by-passing some of their older plants.

This situation may ease somewhat after the turn of the year, when nearly everyone looks for more industries to come into the market for steel. But meanwhile order volume appears to have leveled off.

Auto Outlook—The outlook for orders from the auto companies is encouraging, but uncertain for the short-term. While the auto business is picking up, the car companies are still fighting off the effects of strikes.

Another restraining influence in automotive is the tendency to keep year-end inventories at a minimum due to taxes on inventories in some states. Because of this, auto firms are likely to hold steel stocks to a minimum until the first quarter of 1959.

Mills More Bullish — At the same time, the mills are growing more bullish on the auto outlook. They hear reports the auto companies are quietly revising upward their earlier estimates of 1959 sales.

Some carmakers are said to be thinking in terms of nearly six million cars, with 5.5 million as a minimum. Output this year is expected to be less than 4.5 million units. One medium-priced auto firm is said to have the biggest order backlog in its history.

The mills look for a definite improvement in orders after the turn of the year.

Better Times Ahead — Working in their favor is the predicted pickup in construction, an expected improvement in demand from the
railroads, predictions of a betterment in oil country activity, and
the expectation that the current improvement in appliances, farm
equipment, and automotive will
continue.

Steel users also are expected to step up inventory building as a hedge against possible labor trouble in steel next summer, when existing contracts are scheduled to expire. Some buyers already are making plans along these lines.

Steel Output, Operating Rates

Production (Net tons, 000 omitted)	This Week 2,025	Last Week 2,011	Month Ago 2,025	Year Ago 1,871
Ingot Index				
(1947-1949=100)	126.0	125.1	126.0	121.1
Operating Rates				
Chicago	87.0	88.0*	85.0	67.0
Pittsburgh	69.0	68.5*	69.0	79.0
Philadelphia	73.0	70.0	77.0	86.0
Valley	57.0	59.5	61.5	60.0
West	80.0	80.0	77.0	80.0
Cleveland	71.0	71.0*	82.0	74.0
Buffalo	78.0	78.0	78.0	83.0
Detroit	95.0	90.0	80.0	90.0
South	58.0	56.5	63.5	60.5
South Ohio River	81.0	89.0*	80.0	89.0
Upper Ohio River	88.0	88.0*	88.0	71.0
St. Louis	98.0	92.0	92.0	89.0
Aggregate	75.0	74.5	75.0	76.0

*Revised

Prices At a Glance

	This	Week	Month	Year
	Week	Ago	Ago	Ago
(Cents per lb unless otherwis	e noted)			
Composite price				
Finished Steel, base	6.196	6.196	6.196	5.967
Pig Iron (gross ton)	\$66.41	\$66.41	\$66.41	\$66.42
Scrap, No. 1 hvy				
(Gross ton)	\$41.17	\$42.33	\$42.83	\$32.67
No. 2 bundles	\$29.33	\$29.50	\$28.83	\$24.67
Nonferrous				
Aluminum ingot	26.80	26.80	26.80	28.10
Copper, electrolytic	29.00	29.00	27.50	27.00
Lead, St. Louis	12.80	12.80	12.80	13.30
Magnesium	36.00	36.00	36.00	36.00
Nickel, electrolytic	74.00	74.00	74.00	74.00
Tin, Straits, N. Y.	99.25	99.75	96.50	89.625
Zinc, E. St. Louis	11.50	11.30	11.00	10.00

Conveyors Speed Factory Flow

Conveyor makers are turning out new systems that provide faster, better handling of materials.

There's growing emphasis on systems which aid continuous flow of production.

• In new conveyor systems the emphasis is on continuous flow of materials for faster, better, more efficient production. For example:

At an automotive plant, engines are assembled on an overhead trolley conveyor system. The engines are tested right on the conveyor, then dispatched for preliminary storage on different lines depending on engine style and type.

Shippers with orders to fill go to a control panel and dial the quantity and types of engines they want. Automatically the correct number of engines is fed out of the proper storage banks for collection at shipping points.

Multiple Choice—After refrigerators are boxed at an appliance plant they are transferred to distribution points by belt and roller conveyors. Dispatchers—seated in a control pulpit—send the boxes along by push button to any number of destinations.

The assigned boxes will bypass other lines until reaching their selected location. They can be temporarily stopped while shipments are accumulated.

Done by Radio—In a 900,000 sq ft warehouse the shipping trucks and dollies are guided by radio fre-

quencies. This is the Towveyor type of conveyor developed by the Jervis B. Webb Co., Detroit.

With the Towveyor system all that appears on the warehouse floor is a small slot working its way throughout storage centers. Under it are a chain and trolley arrangement into which regular fourwheeled trucks or dollies are locked. (See picture.)

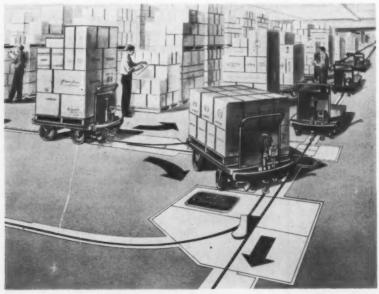
They are then moved by the under - the - floor conveyor with feed-on and discharge directed by radio frequencies. The moving trucks can be switched from a fast line to a slow one for packing and inspection, then looped back to the original line. They can be switched off for in-transit weighing and then returned to the main line.

Promising Outlook — These installations—and others—show why the trend to better materials handling keeps conveyor makers busy. They believe their industry has a tremendous potential, could ring up annual sales of half a billion dollars by 1965.

But even the short-term outlook for the industry is promising. Sales are rebounding quickly from their recession slump. Manufacturers surveyed by The IRON AGE say orders are increasing.

Price Rise Likely—If sales in the last third of 1958 match the pace of the initial, two-thirds the year will be the third best in history for conveyor makers. The overall sales volume will be only about 16 pct below 1957 levels.

Manufacturers warn buyers that conveyor price increases are probably coming. Conveyor makers are trying to hold present price levels, but a moderate rise, about 5-6 pct, is predicted for the near future.



AUTOMATIC CONTROL: Trucks in Towveyor system developed by Jervis B. Webb Co. have coils responding to radio frequencies. Switching areas also have coils buried in floor. As truck nears switch its coil vibrates one in floor, causing relay to trip switch mechanism.

KARDONG CIRCLE BENDER



KARDONG BROTHERS. INC.

MINNEAPOLIS 13. MINN.

GOSS and DE

CHUCKING MACHINES

Four, Five, Six, Eight Spindles . Wark and Tool Rataling Type GOSS & DE LEEUW MACHINE CO., KENSINGTON, CONN.

J. BOYNTON AND CO. **CONSULTING ENGINEERS**

109 N. Wabash Ave., Chicago 2, III.

For internal visual inspec-tion from a few inches to 85 feet in length

Wide field of view

Interchangeable heads for varying angle of view Standard models for most inspections

Special designs readily fabricated from stock parts



For remote observation of inaccessible places for hazardous processes

Designed for specific applications in any length, diameter, field of view or magnification



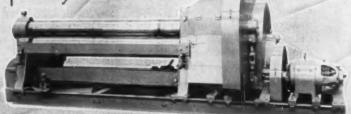
Describe your problem fully. Give diameter, length, irregularities and other particulars. Drawings helpful.

Instrument Co.

Chancellor Street · Phila. 3, Pa. Phone: Rittenhouse 6-6653

PE PLATE BENDING ROLL

Capacity 12" X 8'



Our Line Light and heavy machinery for all classes of sheet metal, plate and structural work

BERTSCH & COMPANY, CAMBRIDGE CITY . INDIANA

IF IT'S ACTION YOU'RE AFTER . . .

Advertise in The IRON AGE. Purchase-Decision executives in metalworking watch The IRON AGE advertising pages every week.



ARMSTRONG BROS. TOOL CO. 5209 ARMSTRONG AVE. CHICAGO 46, U.S.A.



THE FINEST STANDARD BRIGHT and HEAT TREATED CAP SCREWS

AS WELL AS

PRECISION

MILLED - FROM - THE - BAR

CAP SCREWS . SET SCREWS . COUPLING BOLTS and STUDS

ARE PRODUCED BY

Ottemiller Co. Precision Milled Specials?

YORK PENNA quote on yours - promptly

Users Study Wisdom Of Stock Build-Up

Steel buyers are wondering if this is the right moment to increase inventories.

Automakers, still holding their steel stocks low, admit they are taking a gamble.

• Steel users are struggling with a tough problem: Is this the moment to build inventories?

There are compelling arguments for and against a stock buildup now. Reasons why buyers are increasing stocks include: Growing tightness of sheet and bar supplies. Prospect of increased buying of these products by the automakers. Arrival of quota restrictions on galvanized, aluminized and enameling iron sheet. Signs of a general increase in steel buying in the first two quarters of 1959.

But other buyers are resisting inventory buildups—at least for a while. Here's why: In some states users must pay year-end property taxes on steel stocks. Also, money tied up now in steel purchases will be subtracted from 1958 profit statements. And finally, buyers can still get good delivery from mills on the majority of products.

There's little incentive, for instance, for plate and structural users to stock up while demand keeps the market slack. But, even so, some are quietly increasing inventories.

However, galvanized sheet buyers are living with a runaway market. One customer withdrew an order when a mill couldn't give him four-week delivery. He called back later the same day, accepted the original eight weeks' shipping offer and tried to double his tonnage. Sheet and Strip — Auto plants continue operating with fine margins in their steel supply. They have increased their inventory tonnage, but the number of days of working supply has lengthened very little. One auto plant, where steel stocks are 35 pct below past peaks, admits a week's delay in sheet shipments would be costly.

In general, automakers are giving their mills plenty of advance notice on steel needs. They are now booking January tonnage. But they are still shaving their needs pretty close, and bearing down on steel mills for prompt delivery.

Eastern mills predict November and December sheet orders will level out at the October rate. December orders are coming in at a stronger rate than expected. In the Chicago area, sheet is sold out through November. Some mills are booking January and February tonnages.

Galvanized Sheet—Remains the "hottest" product in the market with no signs of a letup. Pittsburgh mills say orders already booked for the first quarter will give some producers a second quarter carryover. The recent hike in zinc prices is adding to the cost of galvanized

PURCHASING AGENT'S CHECKLIST

Tips on how to cut drafting room costs.

P. 61

Steelmakers are relying more on pig iron, less on scrap. P. 62

Will there be supply pinch in oil country goods in '59?

P. 65

products. Other flat-rolled items in heavy demand include: aluminized enameling iron, and terne sheet.

Structurals—Only buyers of light structurals and bar size angles are building up their stocks. Some fabricators, in fact, are still reducing inventories. But a few buyers are questioning mills about the first quarter outlook for shapes. They are apparently wondering if predicted stronger buying by fabricators and freight car builders will tighten the market.

Bar—This market continues to inch upward, with customers doing a little more advance ordering. New orders from auto industry users a re expected to increase shortly. Tonnage for these buyers should increase after orders deferred from October are shipped out.

Hot-rolled bar mills in the **Chicago** area are now quoting delivery in six weeks. Cold finished bar producers are also showing sales gains. Some have reduced their in-plant stocks to very low levels.

Pipe and Tubing — The pipe business continues to move sideways with no pickup or dropoff. Standard pipe sales are still on a hand-to-mouth basis. Some smaller jobbers are increasing stocks. But it's not the result of more business. They must fill inventory holes to give users the quick delivery they demand. Oil country seamless pipe is moving out of downriver depots in better volume. But tonnage orders from oil producers have yet to hit the mills.

Wire Products—Some users are doing more forward buying, according to the sales manager for a large East Coast producer. As a result, both merchant and manufacturers wire orders are a shade better. Construction products are in their seasonal slowdown, following a strong fall. Imports remain a nightmare for domestic producers. One source says wire imports during the first half of 1958 were 50 pct greater than in 1957.

COMPARISON OF PRICES

(Effective Nov. 18, 1958)

Youngstown. Price advances over previous	week az	e printed	in Hear	у Туре
declines appear in Italies.	Nov. 18 1958	Nov. 11 1958	Oct. 21 1958	Nov. 19 1957
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	5.10¢	5.10€	5.10¢	4.925
Cold-rolled sheets	6.275	6.275	6.275	6.05
Gaivanized sheets (10 ga.)	6.875	6.875	6.875	6.60
Hot-rolled strip	5.10	5.10	5.10	4.925
Cold-rolled strip	7.425	7.425	7.425	7.17
Plate	5.30	5.30	5.30*	5.12
Plates, wrought iron	13.55	18.55	13.55	18.15
Stainl's C-R strip (No. 302)	52.00	52.00	52.00	52.00
Fin and Terneplate: (per base		***	*** ***	810.00
Tinplate (1.50 lb.) cokes		\$10.05	\$10.30 9.00	\$10.30 9.00
Tin plates, electro (0.50 lb.)	9.35	9.35	9.55	9.55
Special coated mfg. ternes	9.90	9.90	9.08	8.00
Bars and Shapes: (per pound)			* ****	5.425
Merchant bar	5.675€	5.675¢	5.675∉	7.30
Cold finished bar	7.65	7.65	6.725	6.475
Alloy bars	6.725	6.725	5.50	5.275
Structural shapes	5.50	5.50 45.00	45.00	45.00
Stainless bars (No. 302)	45.00	14.90	14.90	14.45
Wrought iron bars	14.80	14.00	14.90	14.40
Wire: (per pound) Bright wire	8.00¢	8.00€	8.00€	7.65€
	0.000	0.004	0.004	1.004
Rails: (per 100 lb.)		\$5.75	\$5.TB	\$5,525
Heavy rails	\$5.75 6.725	6.725	6.725	6.50
Light rails	6.720	6.725	6.720	0.00
Semifinished Steel: (per net to		800.00	000.00	\$77.50
Rerolling billets		\$80.00	80.00	77.50
Slabs, rerolling	80.00 99.50	80.00 99.50	99.50	96.00
Forging billets	119.00	119.00	119.00	114.00
Alloy blooms, billets, slabs	119.00	118.00	110.00	114.00
Wire Rods and Skelp: (per pou		0.104	0 404	0.154
	6.40€	6.40€	6.40€	6.15€
Wire rods	5.05	5.05	5.05	4.875

Finished	Steel	Composite

Weighed index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips. Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

1	Nov. 18 1958	Nov. 11 1958	Oct. 21 1958	Nov. 19 1957
Pig Iron: (per gross ton)				
	\$70.57	\$70.57	\$70.57	\$70.51
Foundry, Southern Cin'ti	73.57	73.87	73.87	71.65
Foundry, Birmingham	62.50	62.50	62.50	62.50
Foundry, Chicago	66.50	66.50	66.50	66.50
Basic, del'd Philadelphia	70.07	70.07	70.07	70.01
Basic, Valley furnace	66.00	66.00	66.00	66.00
Malleable, Chicago	66.50	66.50	66.50	66.50
Mullenble Valley	66.50	66.50	66.50	66.50
Malleable, Valley Ferromanganese, 74-76 pct Mn,	00.00	00100	90100	
cents per lb.:	12.25	12.25	12.25	12.25
Pig Iron Composite: (per gross to	on)			
Pig iron	\$66.41	\$66.41	\$66.41	\$66.42
Scrap: (per gress ton)				
No. 1 steel, Pittsburgh \$		\$45.50	\$45.50	\$33.50
No. 1 steel, Phila. area	36.50	39.00	40.50	33.00
	42.50	42.50	42.50	31.50
No. 1 bundles, Detroit	36.50	37.50	35.50	23.50
Low phos., Youngstown	46.50	46.50	46.50	33.50
No. 1 mach'y cast, Pittsburgh.	51.50	51.50	51.50	50.50
No 1 mach'y cast, Phila	49.50	49.50	49.50	50.50
No. 1 mach'y east, Chicago	53.50	53.50	53.50	40.50
Steel Scrap Composite: (per gros	s toni			
No. 1 hvy. melting scrap \$	51.17	\$42.33	\$42.83	\$32.67
No. 2 bundles	29.33	29.50	28.83	24.67
Coke, Connellaville: (per net ton	at aug	. 1		
Furnace coke, prompt	el a cover	01450	\$14.50	\$15.38
Foundry coke, prompt\$18-\$1:	0 50 616	-018 50 019	2-618 50 61	
Foundry coxe, prompt \$10-\$1.	5.00 010	-010.00 010	-\$10.00 91	1.00-613
Nonferrous Metals: (cents per po			27.50	27.00
Copper, electrolytic, Conn	29.00	29.00	27.50	27.00
Copper, Lake, Conn	99.25		96.50	89.625
Zinc, East St. Louis		99.75		
Zinc, East St. Louis	11.50	11.50	11.00	10.00
Lead, St. Louis	12.80	12.80	12.80	13.30
Aluminum, virgin ingot	26. 0	26.80	26.80	28.10
Nickel, electrolytic	74.00	74.00	74.00	74.00
Magnesium, ingot	36.00	36.00	36.00	36.00
Antimony, Laredo, Tex	29.50	29.50	29.50	33.00
Tentative. 1 Average. * Revised.				

Steel Scrap Composite

Averages of No. 1 heavy melting steel scraps delivered to consumers at Pittsburgh, Philadelphia and Chicago.

INDEX TO PRICE PAGES

Prices At a Glance	135
Comparison of Prices	139
Bars	146
Billets, Blooms and Slabs	144
Boiler Tubes	148
Bolts, Nuts, Rivets, Screws	149
Clad Steel	148
Coke	148
Electrical Sheets	148
Electrodes	148
Electroplating Supplies	149
Ferroalloys	151
Iron Ore	148
Merchant Wire Products	148
Metal Powders	149
Nonferrous Mill Products	110
Mill Products	143
Primary Prices139-142-	
Remelted Metals	143 143
Scrap	144
Pig Iron	150
Pipe and Tubing	147
Plates	146
Rails	148
Refractories	148
Service Center Prices	149
Shapes	144
Sheets	145
Spring Steel	148
Stainless	150
Steel Scrap	141
Strip	144
Structurals	144
Tinplate	145
Tool Steel	148
Track Supplies	148
Water Pipe Index	149
Wire Rod	145
wire nou	149

"AM I GOING HOME?"



This is an actual photograph of a boy with pulmonary tuberculosis. Years ago he might not have gone home, ever! But thanks to today's modern methods, his case was diagnosed early—and after only a few months of treatment, he was released from the hospital. Your purchase of Christmas Seals helps to make true stories like this possible—through continually improved TB diagnosis, research, and patient rehabilitation. Buy and we Christmas Seals*

This space contributed to the National Tuberculosis Association and its affiliates by

The IRON AGE

Price Break Hits Major Markets

The market was unable to withstand pressure for lower prices.

Downward momentum is not yet spent. Outlook for rest of the year is dim.

 The post-recession buildup in the scrap market ended abruptly this week. It came sooner than most in the industry had expected.

Prices broke in several major markets. Philadelphia was hardest hit with a drop of \$3 in primary openhearth scrap prices. Other breaks ranged from \$2 in Birmingham to \$1 in Pittsburgh and Detroit. Almost every market, with the exception of St. Louis, reported a weakening.

Signs that the break was coming began to appear several weeks ago. Automakers had most of their strikes settled and turned the green light on for full production. Their scrap is now beginning to hit the market in quantity.

The hot metal trend is taking its toll on the dealer market. In Cleveland, for instance, blast furnaces are turning out "unprecedented" tonnages of pig iron. And in Chicago, mills are building up their ore inventories at an "unseasonally high" rate. Scrap purchases aren't keeping pace.

The export prop is no longer available for Eastern port districts, and scrap is being shipped as far West as Pittsburgh and Youngstown, weakening prices there. It could be the start of a chain-reaction in out-of-district competition.

The lower prices in Pittsburgh

and Philadelphia brought a \$1.16 drop in The IRON AGE No. 1 heavy melting Composite Price, now at \$41.17.

Pittsburgh — Prices of the best grades are down \$1. Secondary openhearth grades are holding. The drop in primary openhearth grades prices and in No. 1 railroad heavy melting was caused by lack of mill demand. In addition, the scrap surplus of the East is putting pressure on prices here.

Chicago—After a \$1 plunge last week, this market dried up. Volume continues low with trading at a variety of prices. Railroad lists and new factory bundles lists are selling for more than consumer delivered prices. Ore movement into the area continues unseasonally high. Mills apparently are making no effort to correct their scrap stocks upward in a like manner.

Philadelphia — The bottom dropped out of this market. Prices of primary openhearth grades fell \$3. Secondary grades dropped lesser amounts. Low phos scrap is down \$3 and heavy turnings \$2. All but one mill is out of the market—and it is only taking small tonnage.

New York — A tug-of-war between brokers and dealers is in progress. Brokers are trying to pull in steelmaking grades for a top of \$26 for No. 1 heavy melting. Dealers say \$28 is rock bottom. In view of limited orders, brokers are getting tonnage at \$27.

Detroit—A major consumer of No. 1 grades held up shipment,

causing a \$1 drop in prices. There is very little out-of-district demand. Local inventories are high. Full scale auto production is expected to flood the market with high quality scrap.

Cleveland — Market tone continues to weaken for lack of orders. Cleveland yards are not loaded but Valley yards are full. Scrap that might have gone for export is backing up into the Valley. Blast furnaces are turning out unprecedented tonnages.

St. Louis—Mills continue to buy scrap at unchanged prices. Demand is good as mills appear to be saving their stockpiles for winter weather.

Birmingham—Market here is the slowest in many months. The largest buyer of openhearth grades is completely out of the market. An Atlanta mill is closed by a strike. Brokers are quoting nominal prices \$2 under last quotations for No. 1 steel.

Cincinnati—Some tonnage is going out of district and making some dealers bullish. But local mills are not anxious to buy. Overall trend is slightly weaker.

Buffalo—This market is inactive. There are no price changes. Some scrap is still being shipped on the Great Lakes.

Boston — For the sixth week straight, little scrap is moving here. Machine shop turnings are off \$1.

West Coast — Market continues quiet. Local mills are not pushing for scrap. Only hope for new business rests with export orders.

Houston—This market is weakening. Buyers have the upper hand. A district mill is rationing its scrap intake and the Mexican market is off. Cast iron prices are weaker.

Hamilton—Prices quoted in the Hamilton, Ont., market starting to-day will be brokers buying prices per gross ton on cars. Primary steelmaking grades are up \$5.50 on a local mill purchase.

Pittsburgh

No. 1 hvy. melting\$44.00 to \$45.00	
No. 2 hvy. melting 36.00 to 37.00	
No. 1 dealer bundles 44.00 to 45.00	
No. 1 factory bundles 50.00 to 51.00	
No. 2 bundles 33.00 to 34.00	
No. 1 busheling 44.00 to 45.00	
Machine shop turn 21.00 to 22.00	
Shoveling turnings 25.00 to 26.00	
Cast from borings 25.00 to 26.00	
Low phos. punch'gs plate. 49.00 to 50.00	
tleavy turnings 37.00 to 38.00	
No. 1 RR hvy. melting 46.00 to 47.00	
scrap rails, random lgth 54.00 to 55.00	
Rails 2 ft and under 57.00 to 58.00	
RR specialties 52.00 to 53.00	
No. 1 machinery cast 51.00 to 52.00	
Cupola cast 45.00 to 46.00	
Heavy breakable cast 43.00 to 44.00	
Stainless	
18-8 bundles and solids, 225.00 to 230.00	
18-8 turnings125.00 to 130.00	
430 bundles and solids 125.00 to 130.00	
410 turnings 50.00 to #0.00	

Chicago

No. 1 hvy. melting \$	42.00	to	\$43.00
No. 2 hvy. melting	38.00		
No. 1 dealer bundles	42.00		43.00
No. 1 factory bundles	48.00		49.00
No. 2 bundles	31.00		32.00
No. 1 busheling	42.00		43.00
Machine shop turn	22.00		23.00
Mixed bor. and turn	24.00		25.00
Shoveling turnings	24.00		25.00
Cast iron borings	23.00		24.00
Low phos. forge crops	52.00		53.00
Low phos. punch'gs plate.	48.00		49.00
Low phos. 3 ft and under	46.00		47.00
No. 1 RR hvy. melting	46.00		47.00
Scrap rails, random lgth	52.00		53.00
Rerolling rails	63.00		64.00
Rails 2 ft and under	59.00		60.00
Angles and splice bars	54.00		55.00
RR steel car axles	71.00		72.00
RR couplers and knuckles	51.00		52.00
No. 1 machinery cast	53.00		54.00
Cupola cast	47.00		48.00
Heavy breakable cast	41.00		42.00
Cast fron wheels	42.00		43.00
Malleable	56.00		57.00
Stove plate	44.00		45.00
Steel car wheels	52.00		53.00
Stainless		-0	
18-8 bundles and solids.	220.00	to	225.00
18-8 turnings			
430 bundles and solids	115.00	to	120.00
430 turnings	65.00	to	70.00
	00.00	-0	10,00

Philadelphia Area

rniiaaeipnia Area			
No. 1 hvy. melting	36.00	to	\$37.00
No. 2 hvy, melting	33.90	to	34.00
No. 1 dealer bundles	36.00	to	37.00
No. 2 bundles	22.50	to	23.50
No. 1 busheling	36.00	to	37.00
Machine shop turn	19.00	to	20.00
Mixed bor, short turn	20.00		
Cast iron borings	20.00		
Shoveling turnings	23.00	to	
Clean cast. chem. borings.	32.00	to	
Low phos. 5 ft and under.	38.00		
Low phos. 2 ft, punch'gs	39,00		
Elec. furnace bundles	37.00		
Heavy turnings	32.00		
RR specialties	43.00		
Rails 18 in. and under	57.00		58.00
Cupola cast	40.00		
Heavy breakable cast	41.00		
Cast iron car wheels	44.00		
Malleable	56.00		
No. 1 machinery cast,	49.00		50.00
ATO: A HIGGINIELY CHEL	40.00	£03	00.00

Cincinnati

)

•

Brokers buying prices	per	gross	ton	on	care:
No. 1 hvy. melting .		\$38	.50	to \$	39.50
No. 2 hvy. melting					
No. 1 dealer bundles		38	.50	to	39.50
No. 2 bundles		26	.00	to	27.00
Machine shop turn.			.00	to	10.00
Shoveling turnings			.00	to	22.00
Cast Iron borings .			.00	to	20.00
Low phos. 18 in. and			.00	to	48.00
Rails, random length	h	45	.00	to	50.00
Rails, 18 in, and und			.00	to	56,00
No. 1 cupola cast			.00	to	45.00
Hvy. breakable cast			.00		40.00
Drop broken cast		47	.00	to	48.00

Youngstown

								344.00		
No. 2	hvy.	me	ltir	18				35.00	to	36.00
No. 1	deal	er b	und	lle	H			44.00	to	45.00
No. 2	bunc	iles						31.00	to	32.00
								21.50		
								26.00		
Low p	hos.	pla	te					46.00	to	47.00

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Cleveland

No. 1 hvy. melting	40.50	to	\$41.50
No. 2 hvy. melting	31.50	to	32.50
No. 1 dealer bundles	40.50	to	41.50
No. 1 factory bundles	44.50	to	45.50
No. 2 bundles	27.50	to	28.50
No. 1 busheling	40.50	to	41.50
Machine shop turn	18.00	to	19.00
Mixed bor, and turn	23.00	to	24.00
Shoveling turnings	23.00		
Cast iron borings	23.00	to	24.00
Cut structural & plates, 2 ft		-	
& under	47.50	to	48.50
Drop forge flashings	40.50		
Low phos. punch'gs plate.	43.50		
Foundry steel, 2 ft & under	41.00		
No. 1 RR hvy. melting	46.00		
Rails 2 ft and under	56.00		
Rails 18 in. and under	57.00		
Steel axie turnings	25.00		
Railroad cast.	50.00		
No. 1 machinery cast	49.00		
Stove plate	45.00		
Malleable	61.00		
Stainless	04.00	60	08.00
18-8 bundles	220.00	**	225 00
18-8 turnings	25.00	100	130.00
430 bundles	20.00	60	100.00

Bundio			
No. 1 hvy. melting	36.00	to	\$37.00
No. 2 hvy. melting	29.00	to	30.00
No. 1 busheling	36.00	to	37.00
No. 1 dealer bundles	36.00	to	37.00
No. 2 bundles	27.00	to	28.00
Machine shop turn	16.00	to	17.00
Mixed bor, and turn	18.00	to	19.00
Shoveling turnings	22.00	to	23.00
Cast iron borings	16.00	to	17.00
Low phos. plate	40.00	to	41.00
Structurals and plate,			
2 ft and under	45.00	to	46.00
Scrap rails, random lgth	47.00		48.00
Rails 2 ft and under	59.00	to	60.00
No. 1 machinery cast	48.00	to	49.00
No. 1 cupola cast.	44.00		45.00

CA Louis

ST. LOUIS			
No. 1 hvy. melting	38.00	to	\$39.00
No. 2 hvy. melting	36.00	to	37.00
No. 1 dealer bundles	40.00	to	41.00
No. 2 bundles	29.00	to	30.00
Machine shop turn	18.00	to	19.00
Shoveling turnings	20.00	to	21.00
No. 1 RR hvy. melting	45.00	to	46.00
Rails, random lengths	48.00	to	49.00
Rails, 18 in. and under	53.00	to	54.00
Angles and splice bars	46.00	to	47.00
RR specialties	47.00	to	48.00
Cupola cast	48.00	to	49.00
Heavy breakable cast	38.00	to	39.00
Cast iron brake shoes	38.00	to	39.00
Stove plate	42.00	to	43.00
Cast iron borings	22.00	to	23.00
Cast iron car wheels	44.00	to	45.00
Rerolling rails	60.00	to	61.00
Unstripped motor blocks	39.00	to	40.06

Birmingham

Bu mingham			
No. 1 hvy. melting\$	36.00	to	\$37.00
No. 2 hvy. melting	29.00	to	30,00
No. 1 dealer bundles	36.00	to	37.00
No. 2 bundles	23,00	to	24.00
No. 1 busheling	36.00	to	37.00
Machine shop turn	24.00	to	25.00
Shoveling turnings	25.00	to	26.00
Cast iron borings	13.00	to	14.00
Electric furnace bundles	40.00	to	41.00
Elec. furnace, 3 ft & under	37.00	to	28.00
Bar crops and plate	44.00		
Structural and plate, 2 ft.	43.00	to	44.00
No. 1 RR hvy, melting	38.00	to	39.00
Scrap rails, random lgth	47.00		
Rails, 18 in, and under	52.00		
Angles and splice bars	47.00		
Rerolling rails	58.00		
No. 1 cupola cast	54.00		
Stove plate	53.00		
Cast iron car wheels	42.00		
Unstripped motor blocks	42.00		
Chettipped motor biocks	医额下 25.75	54	****

New York

Brokers buying prices per gross ton on cars:
No. 1 hvy. melting\$26.00 to \$27.00
No. 2 hvy. melting 23.00 to 24.00
No. 2 dealer bundles 17.00 to 18.00
Machine shop turnings 10.00 to 11.00
Mixed bor. and turn 13.00 to 14.00
Shoveling turnings 14.00 to 15.00
Clean cast. chem. borings. 25.00 to 26.00
No. 1 machinery cast 37.00 to 38.00
Mixed yard cast 36.00 to 37.00
Heavy breakable cast \$4.00 to \$5.00
Stainless
18-8 prepared solids190.00 to 195.00
18-8 turnings 85.00 to 90.00
430 prepared solids 70.00 to 75.00
430 turnings 20.00 to 25.00

Detroit

Delloll	
Brokers buying prices per gross ton	on care:
No. 1 hvy. melting\$34.00 to	\$35.00
No. 2 hvy. melting 27.00 to	28.00
No. 1 dealer bundles 36.00 to	37.00
No. 2 bundles 22.00 to	23.00
No. 1 busheling 34.00 to	35.00
Drop forge flashings 32.00 to	33.00
Machine shop turn 15.00 to	16.00
Mixed bor, and turn, 15.00 to	16.00
Shoveling turnings 17.00 to	0 18.00
Cast iron borings 17.00 to	0 18.00
Heavy breakable cast 34.00 to	35.00
Mixed cupola cast 42.00 to	0 43.00
Automotive cast 46.00 to	0 47.00
Stainless	
18-8 bundles and solids. 205.00 to	210.00
10.0 444774777	~ 105 OA

18-8 turnings100.00 to 105.00 430 bundles and solids..105.00 to 110.00

BOSTON
Brokers buying prices per gross ton on cars:
No. 1 hvy. melting \$29.00 to \$30.00
No. 2 hvy. melting 23.00 to 24.00
No. 1 dealer bundles 29.00 to 30.00
No. 2 bundles 16.00 to 17.00
No. 1 busheling 29.00 to 30.00
Machine shop turn 8.00 to 9.00
Shoveling turnings 12.00 to 13.00
Clean cast, chem. borings. 20.00 to 21.00
No. 1 machinery cast 33.00 to 34.00
Mixed cupola cast 33.00 to 34.00
Heavy breakable cast 30.00 to 31.00
Stove plate 32.00 to 33.00
The state of the s

San Francisco No. 1 hvy. melting \$32.00

No. 2 hvy. melting	30.00
No. 1 dealer bundles	28.00
No. 2 bundles	22.00
Machine shop turn	15.00
Cast iron borings	15.00
No. 1 cupola cast	45.00
Los Angeles	
No. 1 hvy. melting	\$34.00
No. 2 hvy. melting	32.00
No. 1 dealer bundles	30.00
No. 2 bundles	17.00
Machine shop turn	11.00

No. 1 dealer bundles	30.00
No. 2 bundles	17.00
Machine shop turn	11.00
Shoveling turnings	13.00
Cast iron borings	13.00
Elec. furn. 1 ft and under	
(foundry)	45.00
No. 1 cupola cast 44.00	to 45.00
Seattle	

No. 1 hvy. melting No. 2 hvy. melting No. 2 bundles No. 1 cupola cast. Mixed yard cast. Hamilton. Ont.

Brokers buying prices per gro	es ton	
No. 1 hvy. melting		\$34.50
No. 2 hvy. melting		30.50
No. 1 dealer bundles		
No. 2 bundles		25.00
Mixed steel scrap		26.50
Bush., new fact., prep'd		34.50
Bush., new fact., unprep'd		28.50
Machine shop turn		15.00
Short steel turn		19.00
Mixed bor, and turn		15.00
Rails, rerolling		39.00
Cast scrap	\$39.00	to 41.00

Mouston Brokers buying prices per gr	088	ton o	n cars:
No. 1 hvy. melting			\$40.00
No. 2 hvy. melting			34.00
No. 2 bundles			25.00
Machine shop turn			17.00
Shoveling turnings			20.00
Cut structural plate			
2 ft & under	\$47.	.00 to	48.00
Unstripped motor blocks	37	.50 to	38.75
Cupola cast	46	.00 to	47.00
Heavy breakable cast	30.	00 to	31.00

\$30,00 28,00 22,00 36,00 36,00

Why Are Reds Paying More for Nickel?

With what was thought to be one of the world's richest mines, Russia is paying a premium for nickel.

Free World trade ponders some possible reasons.

■ Russia has become a buyer of nickel in West Germany, at premiums to 11¢ per lb, according to several reliable sources.

This comes as a bit of a surprise to Free World observers. The Petsamo mine, which Russia took over from Finland after the Russo-Finnish War, was considered to be one of the largest in the world. With it the Reds were thought to be self-sufficient.

Why—Buyers and sellers in the Free World are trying to figure what Russia is up to. They say the answer is vital to their markets and to the entire Free World.

The favored theory is that the Russians just don't have enough nickel. Advocates admit there may be a tinge of wishful thinking in this, but they say there are facts that point this way.

If the Petsamo mine started to peter out the Russians would be hard put to make up the production. The only other known major deposit behind the Iron Curtain, in the Urals, probably still needs extensive development.

Short or Not—However, not all observers believe the Petsamo mine is proving a disappointment. Those who know it best say there was just too much good ore there when the Russians took it over for them to have possibly used it up.

Another report, from Reuters, tends to indicate the Reds are running short of nickel. Reuters says a mill is being built at Sered, Czecho-Slovakia, to process Albanian ores. Completion is said to be scheduled for 1962. Observers point out that Albanian ores are lean, and the trip to the new processing plant would be long. They say this is a move apparently dictated by absolute necessity rather than economics,

If Russia really is running short of nickel the implication is clear. Nickel-bearing alloys are being used more and more for vital parts of missiles, supersonic aircraft, and other applications requiring volume metals with good resistance to heat and friction or corrosion resistance. And a major use in the future will be in nuclear power stations.

Problem—A shortage of nickel would be a serious crick in Russia's plans for world supremacy in speed and space. Some observers go so far as to say her potential is limited until she patches up this weak spot, if there really is one.

Those who insist that the Petsamo mine could not be running out also say there is little likelihood that Russia is really short of nickel. They suggest that Russia may be planning to add Free World nickel markets to her list of targets for economic warfare. To do this Russia would need a fair surplus for flexibility, and now while Free World markets are relatively easy, would be the time to accumulate this.

Also, the complexion of Free World markets will begin to change in another year or so when Freeport Sulphur Co. becomes a major seller and when International Nickel starts bringing in metal from its huge Manitoba expansion project. It might be most vulnerable to attack at this time.

A Clue—One road to an answer has been suggested. If the Russians are buying nickel for their own use, it is not likely to be for consumer goods. For military applications it is often combined with columbium or tantalum to improve physical characteristics. A clarification of Russia's condition on these metals might provide the key clue—domestic necessity, or economic warfare.

Copper

The market looks better.

Shipments in the U. S. were up sharply to 121,692 tons from 101,-064 tons the month before. Worldwide deliveries in October were 293,379 tons; up from 254,667 tons.

The missing statistic is actual consumption. There is no doubt that it has picked up, but a fair portion of the increased buying must be ascribed to inventory rebuilding.

Tin prices for the week: Nov. 12 —99.25; Nov. 13—99.00; Nov. 14 —99.00; Nov. 17—99.25; Nov. 18—99.25.*

* Estimate.

Primary Prices

(cents per lb)	price	last price	date of change
Aluminum pig	24.70	24.00	8/1/50
Aluminum Enget	26.80	26,10	8/1/58
Copper (E).	29.00	27.80	10/23/58
Copper (CS)	30.00	28.50	10/20/58
Copper (L)	29.00	27.80	10/23/58
Lead, St. L.	12.80	12.30	10/14/58
Lead, N. Y.	13.00	12.50	10/14/58
Magneeium Inget	38.00	34.00	8/13/56
Magnesium pig	35.25	33.78	8/13/56
Nickel	74.00	64.80	12/6/86
Titanium sponge	162-182	185-205	11/3/58
Zinc, E. St. L.	11.50	11.00	11/7/58
Zinc, N. Y.	12.00	11.60	11/7/88

ALUMINUM: 99% Ingot frt allwd. COP-PER: (E) = electrolytic, (CS) = custom smelters, electrolytic. (L) = lake. LEAD: common grade. MAGNESIUM: 99.8% plg Velasco, Tex. NICKEL: Port Colbourne. Canada. ZINC: prime western. TIN: see above; other primary prices, pg. 143.

MILL PRODUCTS

(Cents per lb unless otherwise noted)

ALUMINUM

(Base 30,000 lb, f.o.b. ship pt., frt. allowed)

Flat Sheet (Mill Finish and Plate) ("F" temper except 6061-0)

Alloy	.082	.081	.136	3.250-
1100, 3003	45.7	43.8	42.8	43.3
	53.1	48.4	46.9	46.0
	50.1	45.7	43.9	44.9

Extruded Solid Shapes

Factor	6063 T-5	6062 T-6
6-8	42.7-44.2	51.1-54.8
12-14 24-26.	42.7-44.2	52.0-56.5 62.8-67.5
36-38	46.7-49.2	86.9-90.5

Screw Machine Stock-2011-T-3

Size"	34	36-56	34-1	134-134
Price	62.0	61.2	59.7	57.3

Roofing Sheet, Corrugated

(Per sheet, 26" wide base, 16,000 lb)

Length"→	72	96	120	144
.019 gage	\$1.411	\$1.884	\$2.353	\$2.823
	1.762	2.349	2.937	3.524

MAGNESIUM

(F.o.b. shipping Pt., carload frt. allowed) Sheet and Plate

Type→	Gage→	.250 3.00	.250- 2.00	.188	.081	.032
AZ31B Star Grade	nd,		67.9	69.0	77.9	108,1
AZ31B Spe	e		93.3	95.7	108.7	171.3
Tread Plate			70.6	71.7		
Tooling Pla	ite	73.0				

Extruded Shapes

factor->	6-8	12-14	24-26	36-38
Comm. Grade. (AZ31C)	69.6	70.7	75.6	89.2
Spec, Grade	84.6	85.7	90.6	104.2

Alloy Ingot

1

)

AZ91B (Die Casting)	37.25	(delivered	()
AZ63A.	AZ92A AZ91C (Sand Castir	w) 40.75	(Volesco	Fow)

NICKEL, MONEL, INCONEL

(Base prices f.o.b. mill)

	"A	" Nickel	Monel	Inconel
Sheet, CR		126	106	128
Strip, CR		124	108	138
Rod, bar, HF		107	89	109
Angles, HR		107	89	109
Plates, HR		120	105	131
Seamless tube	в.	157	129	200
Shot, blocks			87	

COPPER, BRASS, BRONZE

(Freight included in 5000 lbs)

	Sheet	Wire	Rod	Tube
Copper	52.13		49.36	52.32
Brass, Yellow	45.57	46,11	45.51	48.48
Brass, Low	48.23	48.77	48.17	51.04
Brass, R L	49.17	49.71	49.11	51.98
Brass, Naval	49.74		44.05	52.90
Munts Metal	47.68		43.66	
Comm. Ba.	50.65	51.19	50.59	53.21
Mang. Br.	53 . 44		47.64	
Phos. Bs. 5%	71.09		71.55	

TITANIUM (Base prices, f.o.b. mill)

(Base prices, 1.0.b. mill)

Sheet and strip, commercially pure, \$8.50-\$10.10; alloy, \$15.95; Plate, HR, commercially pure, \$6.60-\$6.75; alloy, \$8.75-\$9.50. Wire, rolled and/or drawn, commercially pure, \$6.50-\$7.09; alloy, \$10.00-\$11.50; Bar, HR or forged, commercially pure, \$5.10-\$5.50; alloy, \$5.10-\$6.35; billets, HR, commercially pure, \$3.80-\$4.35; alloy, \$3.80-\$4.20.

PRIMARY METAL

(Cents per lb unless otherwise noted)
Antimony, American, Laredo, Tex., 29.50
Beryllium aluminum 5% Be, Dollar
per lb contained Be
Beryllium copper, per lb conta'd Be. \$43.00
Beryllium 97% lump or beads,
f.o.b. Cleveland, Reading \$71.50
Bismuth, ton lots 2.25
Cadmium, del'd 1.45
Calcium, 99.9% small lots \$ 4.55
Chromium, 99.8% metallic basis\$ 1.31
Cobalt, 97-99% (per lb)\$2.00 to \$2.07
Germanium, per gm, f.o.b. Miami,

Cobait, 97-99% (per 16) . \$2.00 to \$2.07 Germanium, per gm, fo.b. Miami, Okla., refined . \$5.00 to 42.00 Gold, U. S. Treas, per troy oz. \$35.00 Indium, 99.9%, dollars per troy oz. \$25.01 Indium, 99.9%, dollars per troy oz. \$70 to \$84.00 Indium, 98.9% . \$11.00 to \$14.00 Magnesium, sticks, 100 to 500 lb. 5-90.00 Mercury, dollars per 76-lb flask, f.o.b. New York . \$22S to \$230 Nickel oxide sinter at Buffalo, N.Y. or other U. S. points of entry, contained nickel . \$9.60 Palladium, dollars per troy oz. \$15 to \$17 Platinum, dollars per troy oz. \$57 to \$60 Rhodium . \$120.00 to \$125.00 Silver ingots (¢ per troy oz.) 90.125 Thorium, per kg. \$43.50 Thorium, per kg. \$43.50 Vanadium \$3.45 Zirconium sponge \$5.00

REMELTED METALS

Brass Ingot

					-		-	-	~	. 1	• •	-7	В.	~	•									
-	Cents	p	ϵ	r	l	b	1	d	6	и	v	6	r	8	d	2	C	a	r	le	94	(8)	ds	1)
85-5-	5 ingo	t																						
																								29.00
	. 120																							
	. 123	* *	*	×	×	8	,					8	*		*		*		4				9	27.00
80-10	-10 ir	ıg	0	ŧ																				
	. 305																							
No	. 315	* *	*	×	×	,	*	×	×				×	*	*		8		*	*	×		*	31.25
88-10	-2 ing	ot	t.																					
No	. 210	* *														*	×		*					40.25
				,		,	,	×	*			*	*		,		×			*				36.00
				*			8		8	8		*		8			8	×						32.75
	w ing																							
No	. 405						*					8				×	×					8		24.00
Mans	ranese	t	38	0	n	2	e																	
No	. 421			*	*			*	*	*	*	×	*			*	*		*		4	*	×	25.75

Aluminum Ingot (Cents per Ih del'd 20 000 Ih and over)

(Cente bei in gera an'one in any orei')
95-5 aluminum-silicon alloys
0.30 copper max24.75-25.00
0.60 copper max24.50-24.75
Piston alloys (No. 122 type) 24.25-25.25
No. 12 alum. (No. 2 grade)21.50-22.00
108 alloy
195 alloy
13 alloy (0.60 copper max.)24.25-24.75
AXS-679 (1 pet zine)21.75-22.25

Grade	1-95-97%	%	*	×	*	4	*		×	22.	50-23.50
Grade	2-92-95%									21.3	25-22.25
	3-90-92%										25-21.25
Grade	4-85-90%				*					17.5	50-18.50

Steel deoxidizing aluminum notch bar granulated or shot

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb jor shipments of 20,000 lb and over)

								Heavy	Turning
Copper							0	231/4	22 %
Yellow	brass		0					18	15 1/4
Red br	ass					0		20 %	20
Comm.	bronze							21%	20 %
Mang.	bronze							16%	15 %
Yellow	brass	ro	d	€	n	d	8	16%	

Customs Smelters Scrap

(Cents per pound carload lots to refinery)	, delivered
No. 1 copper wire No. 2 copper wire	25 ½ 24
Light copper	22
*Refinery brass	24 22 16
* Dry copper content.	

Ingot Makers Scrap

(Cents per pound carload lots, delivered
to refinery)
No. 1 copper wire 25 1/2
No. 2 copper wire 24
Light copper 22
No. 1 composition 201/2
No. 1 comp. turnings 20
Hvy. yellow brass solids .
Brass pipe
Radiators 17
Aluminum
Mixed old cast 13 -131/2
Mixed new clips 16 -17
Mixed turnings, dry 14 -15
Correction: Nov. 10 Mixed
old cast 13 -131/2
Panianal Comm

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Copper and Brass
No. 1 copper wire 23 -23 1/2
No. 2 copper wire 21 -211/2
Light copper 19 -191/2
Auto radiators (unsweated), 13%-14%
No. 1 composition 17 -171/2
No. 1 composition turnings 16 -161/2
Clean heavy yellow brass 12 4 -12 4
Brass pipe
New soft brass clippings 1412-15
No. 1 brass rod turnings 12 -121/2
Almodana

Alum, pistons and struts	6 - 615
Aluminum crankcases	10 -101/2
1100 (2S) aluminum clippings	13 -1314
Old sheet and utensils	10 -1016
Borings and turnings	61/2-7
	10 -101/2
2020 (24S) clippings	11%-11%
Zinc	
New zinc clippings	4%- 5%

Old Zinc	316-33
	214-214
Old die cast scrap	2 - 24
Nickel and Monel	
Pure nickel clippings	52-54
Nickel anodes	52-54

Nickel anodes	52-54
Nickel rod ends	52-54
New Monel clippings	30.32
Clean Monel turnings	30-32
Old sheet Monel	24.28
Nickel silver clippings, mixed	18
Nickel silver turnings, mixed	15
Lead	
Soft scrap lead	8 - 814
Battery plates (dry)	93, - 3
Batteries acid free	214 234

Battery plates (dry)	
Batteries, acid free 214-234	
Miscellaneous	
Block tin 75 -76	
No. 1 pewter 59 60	
Auto babbitt	
Mixer common babbitt 9 1/2-10	
Solder joints 13 4 -13 %	
Siphon tops 42	

Solder joints	134-134
Siphon tops	42
Small foundry type	10 1/4 10 %
Monotype	1014-10%
Lino. and stereotype	914- 93
Electrotype	81/4 8 %
Hand picked type shells	64-7
Lino, and stereo, dross	
Electro dross	214-214

	STEEL	BILLE	TS, BLO	OMS.	PIL-		SHAPES	3						
			SLABS		ING	STI	RUCTUR	ALS			STR	IP		
F	PRICES	Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton	Sheet Steel	Carbon	Hi Str. Low Alloy	Carbon Wide- Flange	Hot- rolled	Cold- rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot- rolled	Alloy Cold- rolled
	Bethlehem, Pa.			\$119.00 B3		S.55 B3	8.10 B3	5.55 B5						
	Buffalo, N. Y.	\$80.00 R3, B3	\$99.50 R3,	\$119.00 R3, B3	6.50 B3	5.55 B3	8.10 B3	5.55 B3	\$.10 B3, R3	7.425 S10, R7	7.575 B3			
	Phila., Pa.			-				-	-	7.87\$ P15	-			
	Harrison, N. J.						-				-	-	-	15.55 C/
	Conshohocken, Pa.		\$104.50 //2	\$126.00 //2			-		5.15 A2		7.575 A2			
	New Bedford, Mass.									7.875 R6				-
EAST	Johnstown, Pa.	\$80.00 B3	\$99.50 B3	\$119.00 B3		\$.55 B3	8.10 B3							-
	Boston, Mass.									7.975 T8				-
	New Haven, Conn.						1			7.875 D1				
	Baltimore, Md.									7.425 T8				15.90 78
	Phoenixville, Pa.					5.55 P2		5.55 P2						
	Sparrows Pt., Md.								5.10 B3		7.575 B3			
	New Britain, Bridgeport, Wallingford, Conn.			\$119.00 N8						7.875 W1,S7				
	Pawtucket, R. I. Worcester, Mass.									7.975 N7, A5				15.90 NZ 15.70 TE
	Alton, III.								5.30 L1					
	Ashland, Ky.								5.10 A7		7.575 A7			
	Canton-Massillon, Dover, Ohio		\$102.00 R3	\$119.00 R3. \$114.00 T5						7.425 G4		10.80 G4		15.50 C/
	Chicago, Ill. Franklin Park, Ill. Evanston, Ill.	\$80.00 UI, R3	\$99.50 UI, R3,W8	\$119.00 UI. R3,W8	6.50 UI	\$.50 UI, W8,P13	8.85 U1, Y1,W8	5.50 UI	5.10 W8. N4.AI	7.525 A1, T8, M8	7.575 W8		8.40 W8, S9,13	15.55 A 59,G4,1
	Cleveland, Ohio									7.425 A5, J3		10.75 A5	8.40 J3	
	Detroit, Mich.			\$119.00 R5					\$.10 G3,	7.425 M2, SI,	7.575 G3	10.80 SI		
	Anderson, Ind.							-	M2	D1,P11 7.425 G4				
EST	Gary, Ind. Harbor,	\$80.00 UI	\$99.50 UI	\$119.00 UI,		S.50 UI,	8.05 UI,	5.50 /3	5.10 UI,	7.425 Y/	7.575 UI.	10.90 Y/	8.40 UI.	
LE W	Indiana			YI		13	J3		13,YI		13,Y1		YI	
IDD	Sterling, III.	\$88.00 N4				5.50 N4		-	5.20 N4	2 505 85				15.70 R
Σ	Indianapolis, Ind.						-		5.10 //9	7.575 R5			8.40 .49	13.70 K
	Niles, Warren, Ohio		\$99.50 SI.	\$119.00		-	-		5.10 R3,	7.425 R3,	7.575 R3,	10.80 R3,	8.40 SI	15,55 SI
	Sharon, Pa.		CIO	C10,S1					SI	T4,SI	SI	S/	0.40 51	10,00 5
	Owenzbero, Ky. Pittsburgh, Midland, Butler, Aliquippa,	\$88.00 G5 \$80.00 U1, P6	\$99.50 G5 \$99.50 U1, C11,P6	\$119.00 G5 \$119.00 U1, C11,B7	6.50 UI	5.50 UI. J3	8.05 UI, J3	5.50 UI	5.10 P6	7.425 <i>J3,84</i> 7.525 <i>E3</i>			8.40 59	15.55 59
	McKeespert, Pa. Weirton, Wheeling,				6.50 UI,	5.50 W3		5.50 H/3	5.10 W3	7.425 F3	7.575 W3	10.80 W3		
	Follansbee, W. Va. Youngstown, Ohio	200 00 P	\$99.50 YI,	\$119.00 Y/	W3		8.85 Y/	-	5.10 U	7.425 YI,RS	7 575 1//	10.95 V/	8.40 UI,	15.55 R
	Loungstown, Unio	\$80.00 R3	C10	4113.00 17					3.130	1.465 11,80	Y1 Y1	10.99 17	YI.	Y/
	Fontana, Cal.	\$90.50 K1	\$109.00 K/	\$140.00 K/		6.30 K1	8.85 K1	6.45 K1	5.825 K1	9.29 KI				
	Goneva, Utah		\$99.50 C7			5.50 C7	8.05 C7	-						
	Kansas City, Mo.					\$.60 S2	8.15 52	-	-				8.65 52	
_	Los Angeles, Torrance, Cal.		\$109.00 B2	\$139.00 B2		6.20 C7, B2	8.75 B2		5.85 C7, B2	9.30 C1,R5			9.60 B2	17.75 /3
WES	Minnoqua, Colo.					5.80 C6			6.20 C6	9.375 C6				
SOUTH WEST MIDDLE WEST	Portland, Ore.					6.25 02								-
	San Francisco, Niles, Pittsburg, Cal.		\$109.00 B2			6.15 B2	8.70 B2		5.85 C7. B2					
	Seattle, Wash.		\$113.00 B2			6.25 B2	8.80 B2		6.10 B2				SOURCE SECURITION	
	Atlanta, Ga.					5.70 .48			5.10 A8					
ОПТН	Fairfield, Ala. City, Birmingham, Ala.	\$80.00 72	\$99.50 T2			5.50 T2 R3,C16	8.05 72		5.10 T2, R3,C/6		7.575 T2			
S	Houston, Lone Star, Texas		\$104.50 S2	\$124.00 S2		5.60 S2	8.15 52						8.65 S2	

	STEEL				SHE	ETS				WIRE ROD	TINPI	LATE	
P	RICES	Hot-rolled 18 ga. & hvyr.	Cold- rolled	Galvanized (Hot-dipped)	Enamel- ing	Long Terne	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.		Cokes* 1,25-lb, base box	Electro** 0.25-lb. base box	Hollowar Enamelin 29 ga.
	Buffalo, N. Y.	5.10 B3	6.275 B3				7.525 B3	9.275 B3		6.40 W6	terne deduct	oated mfg. 50c from	
1	Claymont, Del.										1.25-lb. coke price. Can-n	naking quality	
1	Coatesville, Pa.			-						-	1b. deduct \$2	TE 55 to 128 2.26 from	
	Conshohocken, Pa.	\$.15 A2	6.325 AZ				7.575 A2				1.25 lb. coke ° COKES:	base box. 1.50-lb.	
	Harrisburg, Pa.											: 0.50-lb. add	
	Hartford, Conn.										25¢; 0.75-lb. 1.00-lb. add	\$1.00. Differ-	
EASI	Johnstown, Pa.									6.40 B3	ential 1.00 lb add 65¢.	./0.25 16.	
	Fairless, Pa.	\$.15 UI	6.325 UI				7.575 UI	9.775 UI			\$10.50 U1	\$9.20 UI	
	New Haven, Conn.												
	Phoenixville, Pa.												
	Sparrows Pt., Md.	5.10 B3	6.275 B3	6.875 B3			7.525 B3	9.275 B3	10.025 B3	6.50 B3	\$10.40 B3	\$91.0 B3	
	Worcester, Mass.									6.70 A5			
	Trenten, N. J.												
	Alton, III.									6.60 L1			
	Ashland, Ky.	5.10 A7		6.875 A7	6.775 A7		7.525 A7						
	Canton-Massillon, Dover, Ohio			6.875 R1, R3									
	Chicago, Joliet, III.	5.10 W8, Al					7.525 U1, W8			6.40 A5, R3,W8			
-	Sterling, III.									6.50 N4, K2			
	Cleveland, Ohio	5.10 R3, J3	6.275 R3, J3	7.65 R3*	6.775 R3		7.525 R3, J3	9.275 R3,		6.40 A5			
-	Detreit, Mich.	5.10 G3, M2	6.275 G3, M2				7.525 G3	9.275 G3		4			
-	Newport, Ky.	5.10 4/	6.275 Al	-									
	Gary, Ind. Harbor, Indiana	5.10 UI. 13.YI	6.275 UI, I3, YI	6.875 UI.	6.775 UI. 13. YI	7.225 UI	7.525 UI, Y1.13	9.27\$ UI.		6.40 Y/	\$10.40 UI, YI	\$9.10 /3, UI, YI	7.85 U1, Y1
B -	Granite City, III.	5.20 G2	6.375 G2	6.975 G2	6.875 G2							\$9.20 G2	7.95 G2
MG -	Kokomo, Ind.			6.975 C9						6.50 C9			
2	Mansfield, Ohio	5.10 E2	6.275 E2			7.285 E2							
1	Middletown, Ohio		6.275 A7	6.875 A7	6.77\$ A7	7.225 A7							
1	Niles, Warren, Ohio Sharon, Pa.	5.10 R3, SI	6.275 R3	6.875 R3 7.65 R3*	6.77\$ S1	7.225 SI*, R3	7.525 R3, SI	9.275 R3,				\$9.10 R3	
	Pittsburgh, Midland, Butler, Donora, Aliquippa, McKeesport, Pa.	5.10 UI, J3,P6	6.275 U1, J3,P6	6.875 U1, J3 7.50 E3*	6.775 UI		7.525 U1. J3	9.275 U1, J3	10.025 U1, J3	6.40 A5, J3,P6	\$10.40 W5, J3	\$0.10 UI. J3	7.85 UI, J3
1-	Portsmouth, Ohio	\$.10 P7	6.275 P7							6.40 P7			
	Weirton, Wheeling, Follanabee, W. Va.	5.10 W3, W5	6.275 W3, F3,W5	6.875 W3, W5 7.50 W3°		7.225 W3, W5	7.525 W3	9.27\$ W3			\$10.40 W5, W3	\$9.10 W5, W3	7.85 W5
	Youngstown, Ohio	\$.10 UI. YI	6.275 YI	7.50 /3*	6.775 Y/		7.525 YI	9.275 YI		6.40 YI			
-	Fontana, Cal.	5.825 K1	7.40 K/				8.25 K1	10.40 KI			\$11.05 K/	\$9.75 K/	
	Geneva, Utah	5.20 C7											
-	Kansas City, Mo.									6.65 52			
WEST	Los Angeles, Torrance, Cal.									7.20 B2			
1	Minnequa, Colo.									6.65 C6	-		
	San Francisco, Niles, Pittsburg, Cal.	5.80 C7	7.225 C7	7.625 C7						7.20 C7	\$11.05 C7	\$9.75 C7	
	Atlanta, Ga.												
SOUTH	Fairfield, Ala. Alabama City, Ala.	5.10 TZ, R3	6.275 T2, R3	6.875 T2, R3	6.775 72					6.40 T2,R3	\$10.50 72	\$9.20 TZ	

)

STEEL				BA	RS				PLA	TES		WIRE
PRICES												WIKE
		Carbon† Steel	Reinforc- ing	Cold Finished	Alloy Hot- rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfr's. Bright
	Bethlehem, Pa.				6.725 B3	9.025 B3	8.30 B3					
	Buffalo, N. Y.	5.675 R3,B3	5.675 R3,B3	7.70 B5	6.725 B3,R3	9.025 B3,B5	8.30 B3	5.30 B3	-			8.00 W6
	Claymont, Del.							5.30 C4		7.50 C4	7.95 C4	
	Coatesville, Pa.							5.30 L4		7.50 L4	7.95 L4	
	Conshohocken, Pa.							5.30 .42	6.375 A2	7.50 .42	7.95 A2	-
	Harrisburg, Pa.							5.30 P2	6.475 P2			
	Milton, Pa.	5.825 M7	5.825 M7				-					
	Hartford, Conn.			8.15 R3		9.325 R3						
ST	Johnstown, Pa.	5.675 B3	5.675 B3		6.725 B3		8.30 B3	5.30 B3		7.50 B3	7.95 B3	8.00 B3
EAST	Fairless, Pa.	5.825 UI	5.825 UI		6.875 UI					-		
	Newark, Camden, N. J.			8.10 W10. P10		9.20 W10, P10						
	Bridgeport, Putnam, Willimantic, Conn.			8.28 IV/0	6.80 N8	9.175 N8						
	Sparrows Pt., Md.		5.675 B3	8.15 J3				5.30 B3		7.50 B3	7.95 B3	0 to D2
			J.013 D.)	8.20 B5,		9 325 46 PC		3.30 (5)		1.00 D3	1.75 B)	8.10 B3
	Palmer, Worcester, Readville, Mansfield, Mass.			8.20 B), C14		9.325 A5,B5						8.30 A5, W6
	Spring City, Pa.			8.10 K4		9.20 K4						-
	Alton, Ill.	5.875 <i>L1</i>										8.20 L1
	Ashland, Newport, Ky.							5.30 A7, A9		7.50 49	7.95 A7	
	Canton, Massillon, Mansfield, Ohio	6.15° R3		7.65 R3,R2	6.725 R3 6.475 T5	9.025 R3,R2 8.775 T5		5.30 E2				-
	Chicago, Joliet, Waukegan, Madison, Harvey, III.	5.675 U1,R3, W8,N4,P13	5.675 UI.R3, N4,PI3,W8 5.875LI	7.65 A5, W10,W8, B5,L2,N9	6.725 U1,R3, W8	9.025 A5, W10,W8, L2,N8,B5	8.30 U1,W8, R3	5.30 UI,AI, W8,I3	6.375 UI	7.50 UI, W8	7.95 UI, W8	8.00 A5, 8 W 8, N 4, K 2, W 7
	Cleveland, Ohio Elyria, Ohio	5.675 R3	5.675 R3	7.65 A5,C13, C18		9.025 A5, C13,C18	8.30 R3	5.30 R3,J3	6.375 /3		7.95 R3,J3	8.00 A5, C13,C18
	Detroit, Mich.	5.675 G3	5.675 G3	7.90 P3 7.85 P8.B5 7.65 R5	6.725 R5,G3	9.025 R5 9.225 B5,P3, P8	8.30 G3	5.30 G3		7.50 G3	7.95 G3	
	Duluth, Minn.			100					-			8.00 .45
WEST	Gary, Ind. Harbor, Crawfordsville, Hammond, Ind.	5.675 U1,13, Y1	\$.675 U1,13, Y1	7.65 R3,J3	6.725 U1,13, Y1	9.025 R3,M4	8.30 U1, Y1	5.30 U1,13, Y1	6.375 <i>J</i> 3,	7.50 UI, YI	7.95 U1. Y1,13	8.10 M+
	Granite City, III.		-					5.40 G2	-		-	-
MIDDLE	Kokomo, Ind.		5.775 C9					3,40 02			-	0.10.00
Σ	Sterling, III.	5.775 N4	5.775 N4					5.30 N4	-			8.10 C9 8.10 K2
	Niles, Warren, Ohio	2.112 144	3.113 NY	7.65 C10	6.725 C10,	9.025 C10		5.30 R3,S1	-	7.50 S/	7.95 R3,	5.10 K.2
	Sharon, Pa.			1.03 C/O	0.123 C10,	3.023 C10		2.40 RJ,51		1.00.37	SI SI	
	Owensboro, Ky.	5.675 G5			6.725 G5							
	Pittaburgh, Midland, Donora, Aliquippa, Pa.	5.67\$ UI, J3	\$.675 UI, J3	7.65 A5,B4, R3,J3,C11, W10,S9,C8, M9	6.725 U1,J3, C11,B7	9.025 A5, W10,R3,S9, C11,C8,M9	8.30 UI, J3	5.30 UI, J3	6.375 UI, J3	7.50 U1. J3,B7	7.95 U1. J3,B7	8.00 A5, J3,P6
	Portsmouth, Ohio											8.00 P7
	Weirton, Wheeling, Follansbee, W. Va.							5.30 W5				0.00 //
	Youngstown, Ohio	5.675 UI,R3,	5.675 UI,R3,	7.65 AI, YI, F2	6.725 U1, Y1	9.025 Y1,F2	8.30 UI, YI	5.30 UI, R3, YI		7.50 Y/	7.95 UI, YI	8.00 Y/
	Emeryville, Cal. Fontana, Cal.	6.425 J5 6.375 K1	6.425 J5 6.375 K1		7.775 K1		9.00 K1	6.10 KI		8.30 K/	8.75 <i>K1</i>	
	Geneva, Utah							5.30 C7			7.95 C7	
	Kansas City, Mo.	5.925 S2	5.925 S2	-	6.975 S2		8.55 S2					8.25 52
ST	Los Angeles, Torrance, Cal.	6.375 C7,B2	6.375 C7,B2	9.10 R3,P14, S12	7.775 B2	11.00 P14, S12	8.625 B2					8.95 B2
WEST	Minnequa, Colo.	6.125 C6	6.125 C6					6.15 C6				8.25 C6
	Portland, Ore.	6.425 02	6.425 02									-
	San Francisco, Niles, Pittsburg, Cal.	6.375 C7 6.425 B2	6.375 C7 6.425 B2				8.675 B2					8.95 C7,C6
	Seattle, Wash.	6.425 B2,N6	6.425 B2				8.675 B2	6.20 52		8.40 B2	8.85 B2	
-	Atlanta, Ga.	5.875 A8	5.675 A8				2010 02			3.70 D6	0.00 02	8.00 -65
=	Fairfield City, Ala.	5.675 T2,R3,	5.675 T2,R3, C16	8.25 C/6			8.30 T2	5.30 T2,R3			7.95 T2	8.00 T2,R
SOUTH	Birmingham, Ala.	C16										

STEEL PRICES

Key to Steel Producers

With Principal Offices

- Al Acme Steel Co., Chicago
- Alan Wood Steel Co., Conshohocken, Pa. A2
- 43 Allegheny Ludhum Steel Corp., Pittsburgh
- American Cladmetals Co., Carnegie, Pa.
- A5 American Steel & Wire Div., Cleveland
- American Steel & Wire Div., Cleveland
 Angel Nail & Chaplet Co., Cleveland
 Armco Steel Corp., Middletown, Ohio
 All Atlantic Steel Co., Atlanta, Ga.
 Age. Acme-Newport Steel Co., Newport, Ky.
- 49 Acme-Newport Steel Co., Newport, Ky.
- Bit Babcock & Wilcox Tube Div., Beaver Falls, Pa.
- B2 Bethlehem Pacific Coast Steel Corp., San Francisco
- Bethlehem Steel Co., Bethlehem, Pa. 83
- Blair Strip Steel Co., New Castle, Pa.
- R5 Bliss & Laughlin, Inc., Harvey, Ill.
- B6
- Brook Plant, Wickwire-Spencer Steel Div., Birdsboro, Pa.
- R7 A. M. Byers, Pittsburgh
- Braeburn Alloy Steel Corp., Braeburn, Pa.
- Calstrip Steel Corp., Los Angeles
- Carpenter Steel Co., Reading, Pa. CZ
- C4 Claymont Products Dept., Claymont, Del.
- C6. Colorado Fuel & Iron Corp., Denver
- C7 Columbia Geneva Steel Div., San Francisco
- C8 Columbia Steel & Shafting Co., Pittsburgh
- C9 Continental Steel Corp., Kokomo, Ind. C10 Copperweld Steel Co., Pittsburgh, Pa.
- C11 Crucible Steel Co. of America, Pittsburgh
- C13 Cuyahoga Steel & Wire Co., Cleveland
- C14 Compressed Steel Shafting Co., Readville, Mass.
- C15 G. O. Carlson, Inc., Thorndale, Pa.
- C16 Connora Steel Div., Birmingham
- C/8 Cold Drawn Steel Plant, Western Automatic Machine Screw Co., Elyria, O.
- D1 Detroit Steel Corp., Detroit
- D3 Driver Harris Co., Harrison, N. J.
- D4 Dickson Weatherproof Nail Co., Evanston, Ill.
- El Eastern Stainless Steel Corp., Baltimore El Empire-Reeves Steel Corp., Mansfield, O.
- E) Enamel Products & Plating Co., McKeesport, Pa.
- FI Firth Sterling, Inc., McKeesport, Pa.
- F3 Filzaimons Steel Corp., Youngstown
 F3 Follansbee Steel Corp., Follansbee, W. Va.

- G? Granite City Steel Co., Granite City, Ill.
- Great Lakes Steel Corp., Detroit G3
- G4 Greer Steel Co., Dover, O.
- G5 Green River Steel Corp., Owenboro, Ky.
- HI Hanna Furnace Corp., Detroit
- 12 Ingersoll Steel Div., Chicago
- 13 Inland Steel Co., Chicago 14 Interlake Iron Corp., Cleveland
- Ji Jackson Iron & Steel Co., Jackson, O.
- J2 Jessop Steel Corp., Washington, Pa. 13 Jones & Laughlin Steel Corp., Pittsburgh
- 14 Joslyn Mig. & Supply Co., Chicago
- Judson Steel Corp., Emeryville, Calif. 15
- K1 Kaiser Steel Corp., Fontana, Calif. K2 Keystone Steel & Wire Co., Peoria
- K2 Keystone Steel & Wire Co., Peorsa
 K3 Koppers Co., Granite City, Ill.
 K4 Keystone Drawn Steel Co., Spring City, Pa.
- L1 Laclede Steel Co., St. Louis
- L2 La Salle Steel Co., Chicago
- L3 Lone Star Steel Co., Dallas
- L4 Lukens Steel Co., Coatesville, Pa.
- MI Mahoning Valley Steel Co., Niles, O.

 M2 McLouth Steel Corp., Detroit

 M3 Mercer Tube & Míg. Co., Sharon, Pa.
- M2 McLouth Steel Corp., Detroit
- M4 Mid States Steel & Wire Co., Crawfordsville, Ind.
- M6 Mystic Iron Works, Everett, Mass.
- M7 Milton Steel Products Div., Milton, Pa.
- M8 Mill Strip Products Co., Evanston, Ill.
- M9 Moltrup Steel Products Co., Beaver Falls, Pa.
- NI National Supply Co., Pittsburgh
- N2 National Tube Div., Pittsburgh
 N4 Northwestern Steel & Wire Co., Sterling, Ill.

 - N6 Northwest Steel Rolling Mills, Seattle
- No Northwest Steet Rolling Mills, Seattle
 N7 Newman Crosby Steel Co., Pawtucket, R. I.
 N8 Carpenter Steel of New England, Inc.,
 Bridgeport, Conn.
 N9 Nelson Steel & Wire Co.

 - 01 Oliver Iron & Steel Co., Pittsburgh
 - 02 Oregon Steel Mills, Portland
- P1 Page Steel & Wire Div., Monessen, Pa.
- P1 Page Steel & Wire Div., Monessen, Pa.
 P2 Phoenix Iron & Steel Co., Phoenixville, Pa.
 P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
 P4 Pittsburgh Coke & Chemical Co., Pittsburgh
 P5 Pittsburgh Steem & Ball Co. Pittsburgh

- Pittsburgh Screw & Bolt Co., Pittsburgh
- Pittsburgh Steel Co., Pittsburgh P7 Portsmouth Div., Detroit Steel Corp., Detroit

- P8 Plymouth Steel Co., Detroit P9 Pacific States Steel Co., Niles, Cal.
- P10 Precision Drawn Steel Co., Camden, N. J.
- P11 Production Steel Strip Corp., Detroit
- P13 Phoenix Mfg. Co., Joliet, Ill.
- P14 Pacific Tube Co.
- P15 Philadelphia Steel and Wire Corp.
- R2 Reliance Div., Eaton Mig. Co., Massillon, O.
- R3 Republic Steel Corp., Cleveland
- R4 Roebling Sons Co., John A., Trenton, N. J.
- R5 Jones & Laughlin Steel Corp., Stainless and Strip Div.
- R6 Rodney Metals, Inc., New Bedford, Mass.
- R7 Rome Strip Steel Co., Rome, N. Y.
- Sl Sharon Steel Corp., Sharon, Pa.Sl Sheffield Steel Div., Kansas City
- S3 Shenango Furnace Co., Pittsburgh
- S4 Simonda Saw and Steel Co., Fitchburg, Mass.
- Sy Sweet's Steel Co., Williamsport, Pa.Stanley Works, New Britain, Conn.
 - 58 Superio: Drawn Steel Co., Monaca, Pa.
 - Superior Steel Div. of Copperweld Steel Co., Carnegie, Pa.
- S10 Seneca Steel Service, Buffalo
 - S11 Southern Electric Steel Co., Birmingham
 - S12 Sierra Drawn Steel Corp., Los Angeles, Calif.

 - TI Tonawanda Iron Div., N. Tonawanda, N. Y.Tennessee Coal & Iron Div., Fairfield
- T3 Tennessee Products & Chem. Corp., Nashville
- 74 Thomas Strip Div., Warren, O.
- 75 Timken Steel & Tube Div., Canton, O.
- 77 Texas Steel Co., Fort Worth
- 78 Thompson Wire Co., Boston
- UI United States Steel Corp., Pittsburgh
- U2 Universal Cyclops Steel Corp., Bridgeville, Pa. U3 Ulbrich Stainless Steels, Wallingford, Conn.
- U4 U. S. Pipe & Foundry Co., Birmingham
- W1 Washington Steel Co., Washington, Conn. W2 Washington Steel Corp., Washington, Pa.
- W3 Weirton Steel Co., Weirton, W. Va.
- W4 Wheatland Tube Co., Wheatland, Pa
- W5 Wheeling Steel Corp., Wheeling, W. Va.
- W6 Wickwire Spencer Steel Div., Buffalo W7 Wilson Steel & Wire Co., Chicago.
- W8 Wisconsin Steel Div., S. Chicago, Ill.
- W9 Woodward Iron Co., Woodward, Ala.
- W10 Wyckoff Steel Co., Pittsburgh
- W12 Wallace Barnes Steel Div., Bristol, Conn. VI Youngstown Sheet & Tube Co., Youngstown, O.

PIPE AND TUBING

Base discounts (pct) f.o.b. mills. Base price about \$200 per not ton.

							BUTT	WELD										SEAN	ILESS			
	1/2	In.	84	In.	11	ln.	11/4	In.	11/2	In.	21	In.	21/2-3	3 In.	2	Îm.	21/9	In.	3	ln.	31/2-	4 In.
STANDARD T. & C.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk	Gal.	BH.	Gal.	Blk.	Gal.	Dik.	Gal.	Blk.	Gal.	Blk.	GaL	Blk.	Gal.	Blk.	Gal.
Sparrows Pt. B3	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	+5.75	9.75	+4.75	10.25		11.75									
Youngstown R3	2.25		5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Fontana KI Pittsburgh J3	*10.75	*26.00	*7.75 5.25	*ZZ. 00	*4.25	*17.50	*1.75	*16.75	*1.25	*15.75	*0.75	*15.25	0.75	+15.50		112711	12.15	111761	*****	12000	44 00	******
Pittsburgh J3	0.25		3.25	*11.0	6.75	*4.50	9.75	+5 75	0.75	*Z.75	12.25	*4.25	13.75	*2.50	*12.25	*27.25		+22.50			*1.75	*18.50
Sharon M3	2.25		5.25	*9.0	8.75	*4.50	11.25	+3.75	11.75	*2.75	12.25	*2.25	13.75	*2.5B								
Fairless N2	0.25		3.25	*11.0	6.75	*6.50	9.25	+5.75	9.75	*4.75	10.25	*4.25		+4.50								
Pittaburgh N1	2.25		5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*7.25	13.75		*12.25	*27.25		*22.50			*1.75	*18.50
Wheeling W5	2.25		S.25 5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25			*2.50								
Youngstown Y/	2.25		5.25	*9.0	8.75	*4.50	11.25	43.75	11.75	*2.75	12.25	*2.25		*2.58	+19 25	+27 25	45 75	*22.50	*3.25	*20.0	41.75	+18 50
Indiana Harbor Y1	1.25	*14.0	4.25		7.75	+5.50	10.25	+4.75	10.75	*3.75	11.25			*3.50				22.00				10.00
Lorain N2	2.25	*13.0	5.25	*9.0	8.75	+4.50	11.25	*3.75	11.75					*2.50				*22.50				
EXTRA STRONG PLAIN ENDS																						
Sparrows Pt. B3	4.75	*9.0	8.75		11.75	*0.50	12.25		12.75	+0.75	13.25											
Youngstown R3	6.75		10.75	*3.8	13.75	1.50	14.25	0.25	14.75	1.25	15.25			0.50								*****
Fairless N2	4.75		8.75 *2.25	*5.8	0.75	*8.58	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50							*****	
Pittaburgh /3	6.75	+7.0	10. TE	43.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*16 75	+94 75	+3,25	*19.0	40 75	*16.50	4 25	*11.50
Alton, Ill. L1	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25			*1.50	10.00	24.10		10.0				
Sharon M3	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25		1.25				0.50								
Pittaburgh NI	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25		1.25	15.25			0.50		*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Wheeling W5 Wheatland W4	6.75	+7.0	10.75	*3.0	13.75	1.50	14.25	0.25		1.25	15.25	1.75		0.50		******					*****	
Youngstown Y/	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75		0.50	910 70	*24.75	*3.25	*19.0	40 75	*16.50	A 96	+11 SA
Indiana Harbor Y1	5.75	*8.0	9.75	*4.0	12.75	0.50	13.25	*0.75	13.75	0.25	14.25	0.75		*0.50	10. 21	64.13	3.60	-	9.13	200.00	4.63	11.30
Lorain N2	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25				0.50	*10.75	*24.75	*3.25	*19.0		*16.50	4.25	*11.50
		1				E .							9			6	8	E.	9	0.	4	ē.

Threads only, buttweld and seamless, 2½ pt. higher discount. Plain ends, buttweld and seamless, 3-in. and sinder, 5½ pt. higher discount. Galvanizad discounts based on zinc price range of over 9¢ to 11¢ per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: ½, ¾ and 1-in., 2 pt.; 1½, 1½ and 2-in., 1½ pt.; 2½ and 3-in., 1 pt., e.g., zinc price range of over 13¢ to 15¢ would lower discounts on 2½ and 3-in. pipe by 2 points; zinc price in range over 7¢ to 9¢ would increase discounts. East St. Louis zinc price now 11¢ per lb. (Effective Nov. 17, 1958)

TOOL STEEL

mill					
Cr	V	Mo	Co	per lb	SAE
4	1	-	-	\$1.84	T-1
4	1	-	5		T-4
4	2	-	-		T-2
4	1.5	8	-	1.20	M-1
4	2	6.	_		M-3
4	2	5	_	1.345	M-2
				.955 D	-3, D-5
arden	ed ma	ngan	ese	.505	0-2
al car	rbon			.38	W-1
carl	on .		222	.38	W-1
ar ca	arbon			.325	W-1
are 4	¢ per	Ib h	igher.	West o	f Mis-
pi, 6¢	high	er.			
	Cr 4 4 4 4 4 4 4 4 4 4 4 6 ardena al carl ar carl ar carl ar carl ar carl ar carl	Cr V 4 1 4 1 4 2 4 1.5 4 3 4 2 carbon chrurdened mail carbon carbon carbon rehouse prace of the carbon rehouse prace 4¢ per	Cr V Mo 4 1 — 4 1 — 4 1.5 8 4 2 5 carbon chromiundened manganeal carbon carbon	Cr V Mo Co 4 1 — 5 4 2 — — 4 1.5 8 — 4 2 6 — carbon chromium rdened manganese il carbon ar carbon rehouse prices on and are 4¢ per lb higher.	Cr V Mo Co per lb 4 1 — 31.84 4 1 — 5 2.545 4 2 — 2.005 4 1.5 8 — 1.20 4 2 6 — 1.59 5 carbon chromium955 Durdened manganese .505 di carbon38 ar carbon38

C	LAD STE	EL	Base pri	ces, cent	s per lh f.o.b
		Plate (L4, C4,	Sheet (12)	
	Cladding	10 pct	15 pct	20 pct	20 pct
	302				37.50
	304	28.80	31.55	34.30	48.00
38	316	42.20	46.25	50.25	58.75
Steinless Type	321	34.50	37.75	41.05	47.25
hink	347	40.80	44.65	48.55	57.00
S	405	24.60	26.90	29.25	*****
	410	22.70	24.85	27.00	*****
	430	23.45	25.65	27.90	*****

CR Strip (S9) Copper, 10 pct, 2 sides, 38.75; 1 side, 33.10.

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Tie Plates	Track Boits University
Beasemor UI	5.75	6. 725	7 25			
Cleveland R3						15.35
So. Chicago R3 Enaley T2	1			10.10		
Engley T2	5.75	6.725				
Fairfield T2		6.725		10.10	6.875	
Gary UI	5.75		1000		6.875	
Huntington C/6	1	6.50				
Ind. Harbor YI				10.10		
Johnstown B3	1	6.725				
Joliet UI	1		7.25			
Kansas City S2						15.35
Lackawanna B3	5.75	6.725	7.25	40.10	6.875	10.00
Lebanon B3						15.35
Minnequa C6	5.75	7.225		10.10		
Pittsburgh P5				10.10	0.010	14 75
Pittsburgh J3				10 10		14.10
Seattle B2				10.10	6.75	
Steelton B3	5 75	1	2 25	1		
Struthers Y1	-			10 10		
Torrance C7	1			10.10	6.75	
Williamsport S5		6.50		1		
Youngstown R3			1	10.10		

COKE
Furnace, beehive (f.o.b.) Net-Ton Connellsville, Pa
Foundry, beehlve (f.o.b.) . \$18.00 to \$18.50
Foundry oven coke
Buffalo, del'd\$31.75
Detroit, f.o.b 30.50
New England, del'd 31.55
Kearney, N. J., f.o.b 29.75
Philadelphia, f.o.b 29.50
Swedeland, Pa., f.o.b
Painesville, Ohio, f.o.b 30.50
Erie, Pa., f.o.b 30.50
Cleveland, del'd 32.65
Cincinnati, del'd 31.84
St. Paul, f.o.b 29.75
St. Louis, f.o.b 31.50
Birmingham, f.o.b 28.85
Milwaukee, f.o.b 30.50
Neville, Is., Pa 29.25

LAKE SUPERIOR ORES

51.50% Fe natural content, clover Lake ports. Prices for 1958 Freight changes for seller's	season. account.
Openhearth lump	*ross Ton \$12.70
Old range, bessemer	
Old range, nonbessemer	
Mesabi, bessemer	
Mesabi, nonbessemer	
High phosphorus	11.45

ELECTRICAL SHEETS

22-Gage	Hot-Rolled	Cold-Reduced (Coiled or Cut Length)				
F.a.b. Mill Cents Per Lb	(Cut Lengths)*	Semi- Processed	Fully Processed			
Field	11111	9.875	11.11			
Armature	11.70	11.20	11.78			
Elect	12.40	12,475	12.40			
Motor	13.55	13.05	13.55			
Dynamo	14.65	14.15	14.65			
Trans. 72	15.70	15.20	15.70			
Trans. 65	16.30	Grain ()riented			
Trans. 58	16.80	Trans. 80				
Trans. 52	17.85	Trans. 73 Trans. 66				

Producing points: Beach Bottom (WS); Brackonridge (AS); Granite City (G2); Indiana Harbor (IS); Manafield (EZ); Newport, Ky. (AS); Niles, O. (SI); Vandergrift (UI); Warren, O. (RS); Zanaville, Butler (AI).

ELECTRODES

Cents per lb. f.o.b. plant, threaded, with nipples, unboxed.

(GRAPHITE	3	CARBON*					
Diam. (In.)	Longth (In.)	Price	Diam. (ln.)	Longth (in.)	Price			
24 20 18 14 12 10 10 7 6 4 3 2	84 72 72 72 72 72 60 48 60 40 40 30 24	26.00 25.25 25.75 26.25 28.00 28.50 28.25 31.50 35.00 37.90 39.25 60.75	40 35 30 24 20 17 14 12 10 8	100, 110 110 12 to 84 90 72 72 72 60 60 60	10.70 10.70 10.85 11.25 11.00 11.40 11.85 12.35 13.00			

• Prices shown cover carbon nipples.

REFRACTORIES

Fire Clay Brick

Carloads	per 1000
Super duty, Mo., Pa., Md., Ky	\$185.00
High duty (except Salina, Pa.,	
add \$5.00)	140.00
Medium duty	125.00
Low duty (except Salina, Pa.,	
add \$2.00)	103.00
Ground fire clay, net ton, bulk	22.50

Silica Brick

Silied Bilek
Mt. Union, Pa., Ensley, Ala \$158.00
Childs, Hays, Latrobe, Pa 163.00
Chicago District 168.00
Western Utah 183.00
California 165.00
Super Duty
Hays, Pa., Athens, Tex., Wind- ham, Warren, O., Morrisville
163.00-168.00
Silica cement, net ton, bulk, Latrobe 29.75
Silica cement, net ton, bulk, Chi-
cago 26.75
Silica cement, net ton, bulk, Ens-
ley, Ala
Silica cement, net ton, bulk, Mt.
Union 25.75
Silica cement, net ton, bulk, Utah

Chrome Brick Per net Standard chemically bonded, Balt.\$10	9.00
	ton
Standard chemically bonded, Curt-	

Magnesite Brick

Grain Ma	gnesit	e :	St.	%	to	14-in.	grains
Domestic,							\$73.00
Luning, in bulk in sack						52.0	46.00 0-54.00

Dead	Burned	Dolomit	e	Per	net ton
Pa. Mis	w. V.	roducing a., Ohio alley			15.00

(Effective Nov. 17, 1958)

MERCHANT WIRE PRODUCTS

	Standard Q Coated Nails	Wores Wire Fence	"T" Fence Posts	Single Loop Bale Ties	Galv. Barbed and Twisted Barbless Wire	Merch. Wire Ann'ld	Merch. Wire Galv.
F.o.b. Mill	Col	Cul	Cul	Col	Col	¢/lb.	¢/lb.
Bartonville K2** Buffalo W6. Chicago N4*** Chicago R3 Cleveland A6. Cleveland A6. Cleveland A5 Crawf dav. M4** Donora, Pa. A5. Duluth A5 Fairfield, Ala. T2 Galveston D4 Houston S2 Jacksonville M4 Johnstow B3**	173 175 175 173 173 173 173 173 173 173 174 178 184-1 173 175 178 178 178 178 178 178 178 178 178 178	187 190 192 192 192 190 187 187 187 192 197 189 192 192 192 193 192 192	177	214 212 214 212 212 212 212 213 214 217 217 217 217	190 198 198 196 193 193 193 195 198 198 198 198 198 198 198 198 198 198	9.00 8.75 9.00 8.65 9.00 9.10 9.00 9.25 9.10 9.95 9.25 9.25 9.25 9.30 9.40 9.40 9.55 9.25 9.25 9.30 9.40 9.40 9.55 9.40 9.40 9.40 9.40 9.40 9.40 9.40 9.40	9.775 9.55 9.55 9.55 9.55 9.65 9.65 9.65 9.80 9.325 9.80 9.325 9.80 9.85 9.85 9.775

* Zinc less than .10¢. *** .10¢ zinc. * 11-12¢ zinc. † Plus zinc extras. ‡ Wholesalers only.

C-R SPRING STEEL

		CARBON CONTENT							
Centa Per Lb F.o.b. Mill	0.26- 0.40		0.61- 0.80	0, 81- 1, 05	1.06-				
Anderson, Ind. Gf		10.40	12.60	15.60	18.55				
Baltimore, Md. 78	9.50	10.70	12,90	15.90	18,85				
Bristol, Conn. W/2		10.70	12,90	16.10	19.30				
Boston T8	9.50	10.70	12.90	15.90	18.85				
Buffalo, N. Y. R7	8.95	10.40	12.60	15.60	18.55				
Carnegie, Pa. S9		10.40	12.60	15,60	18.55				
Cleveland 45		10.40	12.60	15,60	18.55				
Dearborn S1	9.05	10.50	12.70						
Detroit D1	9.05		12.70	15.70					
Detroit D2	9.05		12.70						
Dover, O. G4			12.60	15,60	18.55				
Evanaton, Ill. M8	9.05		12.60						
Franklin Park, Ill. 78.			12.60	15,60	18.55				
Harrison, N. J. Cll			12.90	16.10					
Indianapolis R5			12.60	15,68	18.55				
Los Angeles Ci			14.80	17.80					
New Britain, Conn. S7			12.90	15.90	18.85				
New Castle, Pa. B4			12.60	15.60					
New Haven, Conn. DI			12.90	15.90					
Pawtucket, R. I. N7			12.90	15.90	18.85				
Riverdale, Ill. Ai			12,60	15.60	18.55				
Sharon, Pa. Sl			12,60	15.60	18.55				
Trenten, R4			12.90	16, 10	19.30				
Wallingford W1			12.98	15.90	18.55				
Warren, Ohio T4			12,60	15.60	18,75				
Worcester, Mass. 45.			12.90	15.90	18.85				
Youngstown R5			12.60	15,60	18.55				

BOILER TUBES

\$ per 100 ft, carlead lots	Si	ize	Sean	Elec. Weld	
cut 10 to 24 ft. F.o.b. Mill	OD- In.	B.W.	H.R.	C.D.	H.R.
Babcock & Wilcox	2 2½ 3 3½ 4	13 12 12 11 10	40.28 54.23 62.62 73.11 97.98		35.22 47.43 54.77 63.93 85.53
National Tubo	2 2½ 3 3½ 4	13 12 12 11 10	48.28 54.23 62.62 73.11 97.08	€3.57	35.22 47.43 54.77 63.93 85.53
Pittaburgh Steel, ,	2 2½ 3 3½ 4	13 12 12 12 11 10	40.28 54.23 62.62 73.11 87.86	63.57 73.40 85.70	

0

METAL POWDERS

Cents per lb, minimum truckload, delivered E. of Miss. River, unless otherwise noted.

Iron Powders

Compacting Powders

Electrolytic, imported,	
f.o.b	to 33.00
Electrolytic, domestic	34.50
Sponge	11.25
Atomized 11.25 Hydrogen Reduced 11.25	
Carbonyl	88.00
Welding Powders	8.10
Cutting and Scarfing Powders	9.10

Copper rowders
Electrolytic, imported
f.o.b. New York 41.90
Electrolytic, domestic 41.00
Precipitated 40.50 to 45.00
Atomized 39.80 to 48.30
Hydrogen Reduced
Bronze 47.20 to 51.50
Chromium, electrolytic \$5.00
Lead
Manganese, f.o.b 42.00
Molybdenum \$3.60 to \$3.95
Nickel \$1.05 to \$1.03
Nickel Silver
Nickel Steel
Solder
Stainless Steel, 302 \$1.07
Stainless Steel, 316 \$1.26
Steel, atomized, prealloyed,
4600 series14.00 plus metal value
Tin14¢ plus metal value
Till 00 05 Lot more the
Titanium, 99.25 + %, per lb.,
Tungsten\$3.15 (nominal)

BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)

Bolta	1-4 Con- tainers	Con- tainers	20,000 Lb.	40,000 Lb.
Machine				
1/2" and smaller x 3" and shorter	55	57	61	62
%" diam. x 3" and shorter	47	4934	54	55
%" thru 1" diam x 6" and shorter	37	3934	45	46
%" thru 1" diam. longer than 6" and 11%" and larger x all lengths Rolled thread, 14"	31	34	40	41
and smaller x 3" and shorter	55	57	61	62
Carriage, lag, plow, tap, blank, step, elevator and fitting up bolts ½" and smaller x 6" and shorter	48	5034	85	86

resistance bines are a bet ton on come and often	
Nuts, Hex, HP reg. & hvy. Keg	ase or
% in or smaller	62 56 51 1/4
C. P. Hex, reg. & hvy. % in. or smaller % in. to 1 ½ in. inclusive 1 ½ in. and larger	62 56 51 1/2
Hot Galv. Hex Nuts (All Types) % in. and smaller	41
Semi-finished Hex Nuts % In. or smaller % In. to 1 ½ in. inclusive 1 ½ in. and larger (Add 25 pct for broken case or quantities)	62 56 51 1/2 keg

Finished

% in. and	smaller		 		69
Rivets			Base	per	100 12
1/2 in. and	larger .		 		\$12.85
7/16 in. ar	d small	er	 Pe	t. 0	ff List

Cap Screws Discount (Packages) Full Finished H. C. Heat Treat
New std. hex head, packaged Full Case

THE IRON AGE, November 20, 1958

** ** ** ** ** ** ** ** ** ** ** **		
%" diam. and smaller x 6" and shorter	54	42
%", %", and 1" diam. x	38	23
%" diam. and smaller x	38	40
longer than 6"		

%", %", and 1" diam. x longer than 6" C-1018 Steel Full-Finished Cartons Bulk

Machine Screws & Stove Bolts

		Disco		
Plain Finish Cartons Bulk	1	Mach. Screws 60	Stove Bolts 60	
	Quantity			
diam.	25,000-and over	60		
5/16 to ½" diam. incl.	15,000-200,000	60		

Machine Screws & Stove Bolt Nuts

		Dis	count
In Cartons	Quantity	Hex 16	Square 19
In Bulk %" diam. & smaller	25,000-and over	15	16

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, frt allowed in quantity)
Rolled elliptical, 18 in. or longer, 500 lb lots	
Brass, 80-20, ball anodes, 2000 lb or more Zinc, ball anodes, 2000 lb lots 17 (for elliptical add 1¢ per lb)	50 50
Nickel, 99 pct plus, rolled carton, 5000 lb	45

Chemicals	
(Cents per lb, f.o.b. shipping poin	it)
Copper cyanide, 100 lb drum Copper sulphate, 100 lb bags, per	65.90
cwt	22.45
Nickel salts, single, 100 lb bags Nickel chloride, freight allowed,	
100 lb	
N. Y., 200 lb drums	23.70
Zinc cyanide, 100 lb	60.75
N. Y. Chromic acid, flake type, 10,000 lb	45.50
or more	30.44

CAST IRON WATER PIPE INDEX

rmingham 125.8
ew York 138.7
nicago 140.9
in Francisco-L. A 148.6
Dec. 1955, value, Class B or heavier
in. or larger, bell and spigot pipe. Ex-
anation: p. 57, Sept. 1, 1955, issue.

STEEL SERVICE CENTERS

Metropolitan	Price.	dollara	DOT	100	Ib.

		Sheets		Strip	Plates	Shapes	Ba	rs		Alloy	Bars	
City Delivery \$ Charge	Het-Rolled (18 ga. & hvr.)	Cold-Ralled (15 gage)	Galvanized (10 gage)††	Hat-Ralled		Standard	Hot-Rolled (merchant)	Cold. Finished	Hat Rolled 4615 As rolled	Hot-Rolled 4149 Annealed	Cold-Drawn 4615 As rolled	Cold-Drawn 4148 Annealed
Atlanta	8.50	9.87	10.13	8.91	9.29	9.40	9.39	13.24°	******			
Baltimore \$.10	8.65	9.35	9.09	9.15	9.10	9.65	9.55	11.80*	16.28	15.28	19.82	19.08
Birmingham	8.18	9.45	10.46	8.51	8.89	9.00	8.99					
Boston	9.41	10.50	11.49	9.84	10.12	10.11	10.21	13.45°	16.79	15.79	20.29	19.56
Buffalo	8,40	9.75	10.95	8.90	9.35	9,40	9.30	11.60*	16.34	15.55	19.01	19.30
Chicago	8.40	9.60	10.65	8.66	9.04	9.15	9.14	9.30	16.20	15.20	19.70	18.95
Cincinnati15	8.58	9.65	16.70	8.98	9.42	9.71	9.46	11.68*	16.52	15.52	20.02	19.27
Cleveland15	8.51	9.69	10.75	8.78	9.28	9.54	9.25	11.40°	16.31	15.31	19.81	19.86
Denver	9.60	11.84	12.94	9.63	9.96	10.04	10.00	11.19				20.84
Detrait	8.66	9.85	11.02	9.63	9.41	9.71	9.45	9.66	15.46	15.48	18.81	19.23
Houston	8.10	8.60		8.15	8.45	8.05	8.10	11.60	16.20	15.25	19.65	18.95
Kansas City15	9.02	10.27	11.37	9.33	9.71	9.82	9.81	10.22	16.87	15.87	20.37	19.62
Los Angeles	8.708	11.20-	12.20	9.15	9.10	9.00	9.10	12.95	17.30	16.35	21.30	20.60
Memphis	8.55	11.80	· ·	8.60	8.93	9.01	8.97	12.11*				*****
Milwaukee 15	8.54	9.73	10.79	8,80	9.18	9.37	9.28	9.54	16.34	15.34	19.84	19.09
New York	8.97	10.23	10.66	9.74	9.87	9.84	10.09	13.35*	16.16	15.60	20.10	19.35
Norfolk29	8.20	****		8.90	8.65	9.20	8.90	10.70				
Philadelphia 10	8,30	9.35	10.44	9.35	9.25	9.20	9.50	12.05*	16.58	15.58	20.08	19.33
Pittsburgh15	8.50-		11.05	8.76	9.05	9.15	9.14	11.40*	16.20	15.20	19.70	18.95
Portland	8,68 10.00 ¹	9.95 11.75 ²	13.303	11.954	11.503	11.100	9.857	15.30*	18.50	17.45	20.75	20.25
San Francisco 10	9.75	11.20	11.40	9.85	10.10	9.95	10.25	13.70	17.05	16.35	21.05	20.60
Seattle	9.95	11.55	12.45	10.00	9.78	9.80	10.10	14.70	17.15	16.80	20.65	20.60
Spekane	10.10	11.70	12.60	10.65	9.85	9.95	10.75	14.85	17.75	16.95	21.55	20.75
St. Louis 15	8.78	9.98	11.03	9.04	9.42	9.63	9.52	9.93	16.58	15.58	20.08	19.35
St. Paul	8.94	10.19	10.86	8.99	9.45	9.53	9.707	10.16		15.41		19.21

Base Quantities (Standard unless otherwise keyed); Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 4999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may be combined with each other for quantity. "All sizes except 18 and 16 gage.

†† 10¢ zinc. ‡ Deduct for country delivery. ** C1018—1 in. rounds. ** 10 ga. x 36" x 120"; ** 20 ga. x 36" x 120"; ** 26 ga. x 30" x 96"; ** 4½" x 1" in lots of 1000 to 9999; ** sheared plate ½" x 84" in lots of 1000 to 9999; ** 35 ga. & heavier.

Producing Point	Basic	Fdry.	Mall	Bess.	Phos.
Birdsbere, Pa. B6	68.00	68.50	69.00	69.50	
Birmingham R3.	62.00	62.50°			
Birmingham W9.	62.68	62.50°	66.50		
Birmingham U4	62.99	62.50*	66.50	1531231	
Buffalo R3	66.00	66.50	67.00	67.50	
Buffalo HI	66.00	66.50	67.00	67.50	
Buffalo W6	66.00	66.50	67.00	67.50	
Chester P2	66.58	67.06	67.50		
Chicago 14	66.00	66.58	66.50	67.00	
Cleveland A5	66.00	66.50	66.50	67.00	71.00
Cleveland R3	66.00	66.58	66.50	67.00	
Duloth 14	66.80	66.58	66.50	67.00	71.00
Erie 14	66.00	66.58	66.50	67.00	71.00
Everett M6	67.5Đ	68.00	68.50		
Fontana K1	75.00	75.50			
Geneva, Utah C7	66,00	66,50			
Granite City G2	67.98	68.40	68,90		
Hubbard Y/			66.50		
ronton, Utah C7	66.00	66.50			
Midland C//	66.00				
Minnegua C6	68,00	68.50	69.00		
Monessen P6	66.00				
Neville Is. P4	66.00	66.50	66,50	67.00	71.00
N. Tonawanda T/		66.50	67.00	67.50	11.00
Sharpeville S3	66,00		66.50	67.00	
So. Chicago R3	66.00	66,50	66.50	67.90	-1
So. Chicago W8.	66.00		66.50	67.60	
Swedeland A2	68.06	68.50	69.00	69.50	
Toledo 14	66-00	66,50	66.50		
				67.00	77 00
Troy, N. Y. R3 Toungatown Y/	68.80	68.50	66.50	69.50	73.00

DIFFERENTIALS: Add, 75¢ per ton for each 0.25 pct silicen or portion thereof over base (1.75 to 2.25 pct except low phose, 1.75 to 2.09 pct pct manganess or portion thereof over 1 pct, \$2 per ton for 0.50 to 0.75 pct nickel, \$1 for each additional 0.25 pct nickel. Add \$1.00 for 0.31-0.69 pct phos.

Add \$1.00 (ev 0.31-0.69 pct phos.
Silvery Iron: Buffale (6 pct), HI, \$79.25; Jackson JI, 14
(Globe Div.), \$78.00; Niagara Falla (15.01-15.50), \$101.00;
(Keshuk (14.01-14.50), \$103.50; (15.51-16.00), \$106.50.
Add \$1.00 per ten for each 0.50 pct allicen ever base (6.01to 6.50 pct) up to 18 pct. Add \$1.25 for each 0.50 pct for an each 0.50 pct pct plots; \$56.00.
Add \$1.25 for each 0.50 pct pct plots; \$56.00.
Add \$1.90 per ten for each 0.50 pct allicen ever base (6.01mannace ever 1.00 pct. Beasemer allvery pig iron (under 1.0
pct phos.); \$56.00. Add \$1.90 premium for all grades
silvery to 18 pct.

† Intermediate low abox.

Product	201	202	301	302	363	304	316	321	347	403	410	416	430
Ingots, reroll.	22.00	23.75	23.25	25.25	-	27.00	39.75	32.25	37.00	-	16.75	-	17.00
Slabs, billets	27.00	30.25	28.00	31.50	32.00	33.25	49.50	40.00	46.50	-	21.50	1000	21.75
Billets, forging		36.50	37.25	38.00	41.00	40.50	62.25	47.00	55.75	28.25	28.25	28.75	28.75
Bars, struct.	42.00	43.00	44.25	45.00	48.00	47.75	73.00	55.50	64.75	33.75	33.75	34.25	34.25
Plates	39.25	48.00	41.25	42.25	45.00	45.75	71.75	54.75	64.75	39.00	30.00	31.25	31.00
Sheets	48.50	49.25	51.25	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	48.25	40.75
Strip, hot-rolled	36.00	39.00	37.25	40.50	-	44.25	69.25	53.50	63.50	-	31.00		32.00
trip, cold-rolled	45.00	49.25	47.50	52.00	56.75	55.00	80.75	65.50	79.25	40.25	48.25	42.50	40.75
Vire CF; Red HR	40.00	40.75	42.00	42.75	45.50	45.25	69.25	52.50- 52.75	61.50	32.00	32.00	32.50	32.50

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., C11; Brackenridge, Pa., A3; Butler, Pa., A7; Vandergrift, Pa., U1; Washington, Pa., W2, J2; Baltimore, E1; Middletown, O., A7; Massillon, O., R3; Gary, U1; Bridgeville, Pa., U2; New Castle, Ind., I2; Detroit, M2; Louisville, O., R5.

Strip: Midland, Pa., C11; Waukegan, Cleveland, A5; Carnegie, Pa., S9; McKeesport, Pa., F1; Reading, Pa., C2; Washington, Pa., W2; W. Leechburg, Pa., A3; Bridgeville, Pa., U2; Detroit, M2; Detroit, S1; Canton, Massillon, O., R1; Harrison, N. J., D3; Youngstown, R5; Sharon, Pa., S1; Butler, Pa., A7; Wallingford, Conn., U3 (plus further conversion extras); W1 (25¢ per lb. higher); New Bedford, Mass., R6; Gary, U1 (25¢ per lb. higher)

Bar: Baltimore, A7; S. Duquesne, Pa., U1; Munhall, Pa., U1; Reading, Pa., C2; Titusville, Pa., U2; Washington, Pa., J2; McKeesport, Pa., U1, F1; Bridgeville, Pa., U2; Dunkirk, N. Y., A3; Massillon, O., R5; S. Chicago, U1; Syracuse, N. Y., C11; Watervliet, N. Y., A3; Waukegan, A5; Canton, O., T5, R3; Ft. Wayne, I4; Detroit, R5; Gary, U1; Owensboro, Ky., G7; Bridgeport, Conn., N6.

Wire: Waukegan, A5; Massillon, O., R3; McKeesport, Pa., F1; Ft. Wayne, J4; Harrison, N. J., D3; Baltimore, A7; Dunkirk, A3; Monessen, P1; Syracuse, C11; Bridgeville, U2; Detroit, R5.

Structurals: Baltimore, A7; Massillon, O., R3; Chicago, Ill., J4; Watervliet, N. Y., A3; Syracuse, C11; S. Chicago, U1.

Plates: Baltimore, E1; Brackenridge, Pa., A3; Chicago, U1; Munhall, Pa., U1; Midland, Pa., C11; New Castle, Ind., Middletown, A7; Washington, Pa., J2; Cleveland, Massillon, R3; Coatesville, Pa., C15; Vandergrift, Pa., U1; Gary, U1.

Forging billets: Midland, Pa., C11; Baltimore, A2; Washington, Pa., J2; McKeesport, F1; Massillon, Canton, O., R3; Watervliet, A3; Pittsburgh, Chicago, U1; Syracuse, C11; Detroit, R5; Munhall, Pa., S. Chicago, U1; Owensboro, Ky., G3; Bridgeport, Conn., N8.

and metals

(Effective Nov. 17, 1958)

Production machining on a job or long-term basis contracts for precision components, assemblies and complete machine building.

1200 modern machine tools and one of the world's largest foundries, now available.

We welcome your inquiry or blueprints for quotation.



FREE! New Facilities File . Write today!

CONTRACT DIVISION Textile Machine Works, Dept. 171, Reading, Pa.

WISSCO PERFORATED METALS ---... in popular designs

For over 60 years, customers have called on CF&I to fill their perforated metals needs. Wissco Perforated Metals are available in:

- round, slot and decorative designs, staggered and straight row arrangements;
- e stainless and carbon steel, monel, copper, brass, bronze and aluminum;
- thicknesses from .003" to .375"; hole sizes from .020".

For further information contact our nearest sales office listed below.

THE COLORADO FUEL AND IRON CORPORATION

Denver and Oakland

5704-A

12

0

In the East:



WICKWIRE SPENCER STEEL DIVISION

Atlanta · Boston · Buffalo · Chicago · Detroit New Orleans · New York · Philadelphia

........

FERROALLOY PRICES

Ferrochrome Cents per lb contained Cr. lump, bulk, carloads, del'd. 67-71% Cr30-1.00%	Spiegeleisen Per gross ton, lump, f.o.b. Palmerton, Pa., and Neville Island, Pa.	Alsifer, 20% Al, 40% Si, 40% Fe, f.o.b. Suspension Bridge, N. Y., per lb. Carloads, bulk
	Manganese Silicon 16 to 19% 3% max \$100.50	Ton lots 11.20¢
103.X S1	19 to 21% 3% max 102.50 21 to 23% 3% max 105.00 Manganese Metal	Calcium molybdate, 43.6-46.6% f.o.b. Langeloth, Pa., per pound contained Mo \$1.28
3.50-5.00% C, 57-64% Cr, 2.00-4.50% SI 28.25	2 in. x down, cents per pound of metal delivered.	Ferrocolumbium, 50-60% lb, 2 in. x D, delivered per pound con- tained Cb.
S1 0.025% C (Simplex) 36.75 86 max C, 50-55% Cr, 6% max Sl. 25.75 45% max C, 50-55% Cr, 2% max 26.50	95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe. Carload, packed	Ton lots
Si	Ton lots	Ta, 40% Cb, 0.30% C, del'd ton lots, 2-in. x D per lb con't Cb
Low-carbon type 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome max. 0.10% C price schedule.	Electrolytic Manganese F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, f.o.b. Marietta, O.,	plus Ta
Chromium Metal	Carloads	lb containers, f.o.b. Langeloth, Pa., per pound contained Mo \$1.68
Per lb chromium, contained, packed, delivered, ton lots, 97.25% min. Cr, 1% max. Fe. 0.10% max. C	Ton lots	Ferrophosphorus, electric, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., \$5.00 unitage, per gross ton
Electrolytic Chromium Metal	Medium Carbon Ferromanganese	Ferrotitanium, 40% regular grade
Per 1b of metal 2" x D plate (1/6" thick) delivered packed, 99.80% min. Cr. (Metallic Base) Fe 0.20 max.	Mn 80 to 85%, C 1.25 to 1.50, S1 1.50% max., carloads, lump, bulk, delivered, per lb of contained Mn	0.10% C max, f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti
Carloads \$1.15 Ton lots 1.17 Less ton lots 1.19	Low-Carb Ferromanganese	Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge,
Low Carbon Ferrochrome Silicon (Cr 39-41%, Si 42-45%, C 0.05% max.)	Cents per pound Mn contained, lump size, packed, del'd Mn 85-90%. Carloads Ton Less	O., freight allowed, ton lots, per lb contained Ti \$1.50 Less ton lots \$1.54
Carloads, delivered, lump, 3-in. x down, packed.	P. 90% Mn 37.15 39.95 41.15 0.07% max. C 35.10 37.90 39.10	Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, car-
Price is sum of contained Cr and contained Si. Cr Si	0.10% max. C 34.35 37.15 38.35 0.15% max. C 33.60 36.40 37.60 0.30% max. C 32.10 34.90 36.10	load per net ton\$240.00 Ferrotungsten, ¼ x down
Carloads, bulk 28.25 14.60 Ton lots 33.50 16.05 Less ton lots 35.10 17.70	0.07% max. C, 0.06% (Buils) P, 90% Mn 37.15 39.95 41.15 0.07% max. C 35.10 37.90 39.10 0.10% max. C 34.35 37.15 38.35 0.15% max. C 33.60 36.40 37.60 0.30% max. C 32.10 34.90 36.10 0.50% max. C 31.60 34.40 35.60 0.75% max. C, 80.85% Mn, 5.0-7.0% Si 28.60 31.40 32.60	packed, per pounds contained W, ton lots delivered \$2.15 (nominal)
Calcium-Silicon	Silicomanganese	Molybdic oxide, briquets per lb contained Mo, f.o.b. Langeloth,
Per lb of alloy, lump, delivered, packed. 30-33% Cr, 60-65% Sl, 3.00 max. Fe. Carloads, bulk 24.00 Ton lots 27.95	Lump size, cents per pound of metal, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢ f.o.b. shipping	bags, f.o.b. Washington, Pa., Langeloth, Pa
Less ton lots	point. Carloads bulk	Simanal, 20% Sl, 20% Mn, 20% Al, f.o.b. Philo, Ohio, freight allowed per lb.
Cents per lb of alloy, lump, delivered, packed.	Carloads, bulk, delivered, per lb of briquet 15.10 Briquets, packed pallets, 3000 lb up	Carload, bulk lump 18.50¢ Ton lots, packed lump 20.50¢ Less ton lots
16-20% Ca, 14-18% Mn, 53-59% St. Carloads, bulk	to carloads 16.30	Vanadium oxide, 86-89% V ₂ O ₅ per pound contained V ₂ O ₅ \$1.38
Less ton lots 27.15	Silvery Iron (electric furnace) Si 15.50 to 16.00 pct., f.o.b. Keokuk,	Zirconium silicon, per lb of alloy 35-40% del'd, carloads, bulk. 26.25¢
Cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe 1/2 in. x 12 mesh.	Iowa, or Wenatchee, Wash., \$106.50 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., \$93.00.	12-15%, del'd lump, bulk- carloads 9.25¢
Ton lots	Silicon Metal	Boron Agents
V Foundry Alloy Cents per pound of alloy, f.o.b. Sus-	Cents per pound contained Si, lump size, delivered, packed.	Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per ib con-
Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5: 38-42% Cr, 17-19% St, 8-11% Mn, packed.	98.25% Si, 0.50% Fe., 24.95 23.65	tained B 2000 lb carload \$5.50
Ton lots	98% St, 1.0% Fe 24.45 23.15 Silicon Briquets	Ton lots per pound 45¢ Less ton lots, per pound 50¢
Graphidox No. 4	Cents per pound of briquets, bulk, de- livered, 40% Si. 2 lb Si. briquets.	Corbortam, Ti 15-21%, B 1-2%, SI 2-4%, Al 1-2%, C 4-5-7.5%,
Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, Si 48 to 52%, Ti 9 to 11%,	Carloads, bulk 8.00 Ton lots, packed	f.o.b., Suspension Bridge, N. Y., freight allowed. Ton lots per pound 14.00¢
Carload packed	Electric Ferrosilicon Cents per lb contained Si, lump, bulk, carloads, f.o.b. shipping point.	Ferroborou, 17.50 min. B, 1.50% max. Sl, 0.50% max. Al, 0.50% max. C, 1 in. x D, ton lots \$1.20 F.o.b. Wash., Pa., Niagara Falls, N. Y., delivered 100 lb up
Less ton lots	50% Si 14.60 75% Si 16.90 65% Si 15.75 85% Si 18.60	N. Y., delivered 100 lb up 10 to 14% B
Maximum base price, f.o.b., lump size, base content 74 to 76 pct Mn.	90% 81 20.00	10 to 14% B
Producing Point per-lb Marletta, Ashtabula, O.; Alloy, W. Va.; Sheffleld, Ala.; Portland,	Ferrovanadium 50-55% V delivered, per pound, contained V, in any quantity.	Grainal, f.o.b. Cambridge, O., freight, allowed, 100 lb and over No. 1
Ore. 12.25 Johnstown, Pa. 12.25 Neville Island, Pa. 12.25 Sheridan, Pa. 12.25	Openhearth 3.20 Crucible 3.30 High speed steel 3.40	Manganese-Boron, 75.00% Mn, 17.50% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x
Sheridan, Pa. 12.25 Philo, Ohio 12.25 S. Duquesne 12.25 Add or substract 0.1¢ for each 1 pct Mn	Calcium Metal	D, del'd. Ton lots (packed) \$1.46 Less ton lots (packed) 1.57
Briquets, delivered, 66 pct Mn:	Eastern zone, cents per pound of metal, delivered. Cast Turnings Distilled	Nickel-Boron, 15-18% B. 1.00%
Carloads, bulk	Ton lots\$2.05 \$2.95 \$3.75 100 to 1999 lb 2.40 3.30 4.55	max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, del'd less ton lots 2.15
	(Effective Nov. 17, 1958)	

(Effective Nov. 17, 1958)

RAILWAY EQUIPMENT

FOR SALE Used As-Is Reconditioned RAILWAY CARS

All Types SERVICE-TESTED FREIGHT CAR REPAIR

> PARTS For All Types of Cars LOCOMOTIVES

Diesel, Steam, Gasoline Diesel-Electric

SPECIAL

STANDARD GAUGE CARS 10-70 ton Capacity ORE HOPPER CARS 660 Cubic Feet 40- and 50-Ton Capacity

RAILWAY TANK CARS and STORAGE TANKS

6,000-, 8,000- and 10,000-Gallon Cleaned and Tested

CRANES

Overhead and Locomotive

IRON & STEEL PRODUCTS, INC

General Office
13496 S. Brainard Ave.
Chicage 33, Illinois
Phone: Mitchell 6-1212
New York Office
Suite 1608-9, S1-B East 42nd St.
New York 17, N. Y.
Phone: YUkon 6-4766 "ANYTHING containing IRON or STEEL"

REBUILT-GUARANTEED **ELECTRICAL EQUIPMENT** STEEL MILL SPECIALS

- (1) 2200-H.P. Westinghouse Motor, 600 V.D.C., 300/600 R.P.M.
- (1) 1250-H.P. Allis-Chalmers Motor, 600 V.D.C.,300/600 R.P.M.
- (1) S.S. 4-unit M.G. Set consists of 2500-H.P., 8 P.F. Syn. motor, 11000/4160-V., 3 ph., 60 cy. (1) 1060-K.W. Gen. 600-V.D.C. and (2) 760-K.W. 600-V.D.C. Generators, complete with exciter sets.
- (2) S.S. 645-H.P. Mill Motors, each 300-V.D.C. 1000 R.P.M. (used with above 1060-K.W. Gen.)
- (2) S.S. Reel Motors (mill type) each 940-H.P. 800/1000 R.P.M., 600-Y.D.C. (used with above (2) 760-K.W. Gen.). We will sell the above complete

PACKAGE or segregate it to suit your REQUIREMENTS with necessary CONTROLS.

Special, before removal (1) 1875-K.W. Whse., M.G. Set, Gen. 250-V.D.C., 514 R.P.M. with 2700-H.P. Syn. Motor, 13800/6900/4000-V., 3 ph., 60 cy. with

T. B. MAC CABE COMPANY

4302 Clarissa St., Philadelphia 40, Penna. Cable Address Phone "Macsteel" Philadelphia, Pa. Davenport 4-8300

THE CLEARING HOUSE

Chicago Buyers Drop Sales Resistance

Used machinery sales at Chicago haven't gained much since their early fall spurt.

But dealers are cheered as customers are willing to inspect and price tools.

These are the signs that have mid-western used machinery dealers optimistic:

A rash of customers walking in off the street - the first of this variety that some dealers have seen in months. A small spurt of emergency calls for equipment on a rush-rush basis.

Holding Fast-The general business trend over late October and early November, has shown no great gains over the levels of early October. Nearly all tool dealers reported a gain in early October sales. No one has lost these gains. A few tool shops have improved on

Lately customers are coming into showrooms to look over equipment. For months, most business has been done by telephone or mail, or by an energetic field sales force belonging to a dealer. Now, customers, as many as eight a day at some places of business, are inspecting, pricing, and occasionally buying equipment.

Inquiries Closed - In addition inquiries from customers that have been hanging fire for months, suddenly erupt into sales. One dealer mentions a 40-in, radial drill which drew an inquiry from a customer in California. The matter then remained static for weeks. The deal was closed suddenly by a telephone call followed by a telegram specifying rush-rush delivery.

A rebuild job that was put off for about a month finally came into the rebuilder's shop. Within an hour a second customer called, wanted a rebuild job of exactly the same type of machine and had to have rush delivery. The rebuilder was forced to turn the second job down.

Dealers Build Stocks - These rush orders haven't amounted to any strong business increases. But they've encouraged dealers to begin boosting inventories. There's been a good, running level of demand for production equipment, boring mills, heavy lathes, tracer lathes, and radial drills.

Foreign tools have been slow. but they are showing the same rash of rush ordering that's been noticed domestic equipment. With foreign tool deliveries as low as two months (compared with 10 months last year), the average dealer who stocks foreign equipment is better equipped to handle rush demands than he was a year

Shop Equipment Gains - Light toolroom and small shop equipment, which lagged through the summer months, is sharing in the rush order spurt. Sheet metal equipment was caught up in the October sales advance, and demand for press brakes, shears, and rolls seems to be holding at those October levels.

1

1)

Stand Dahlstrom #450-6 for stock to 4%

GOOD USED EQUIPMENT CONSIDER FIRST

ANGLE BENDING ROLL ANGLE BANG MACHINE

4" x 4" x 5" Thomas #3 Horisontal

#ALEES
Model 115P Logemann Hydraulic, Box 100" x 48" x
24" Bale Size 24" x 14" x 18"

#ENDING ROLLS
12' x 5" Hilles & Jones Pyramid Type
13' x 3" Bertach Initial Type—NEW

#RAKE—LEAF TYPE
13' x 5" Dreis & Krump #226

MARGING MACHINE*
Charsing Machine.

1

13' x 3'16" Bertaco	110' x 2'16" Bertaco	11' x 4' Dreis & Krump	#226
13' x 4' Dreis & Krump	#226		
13' x 4' Dreis & Krump	#226		
13' x 4' Dreis & Krump	#226		
13' x 4'' Dreis & Krump	#226		
13' x 16'' Dreis & Krump	#226		
13' x 16'' Dreis & Krump	#226		
14' x 16'' Dreis & Krump	#226		
15' x 16'' Dreis & Measurement	120'' Non	120'' Nol D.C.	
10 ton Phil	55' Soan	120'' Nol D.C.	
10 ton Phil	55' Soan	120'' Nol D.C.	
10 ton Phil	55' Soan	120'' Nol D.C.	
10 ton Bhaw	38' Soan	230 Volt D.C.	
10 ton Shaw	48' Soan	230 Volt D.C.	
10 ton Shaw	120'' Soan	230'' Volt D.C.	
10 ton Shaw	120'' Soan	230'' Volt D.C.	
15 ton Northern	54'' Soan	230'' Volt D.C.	
15 ton N.B.-F	15'' Non	120'' N	

15 ton N-H-F
120 ton Shepard Niles
0 RAW BENCHES
0 RAW BENCHES
3000 lb. Draw Bench. 20 ft. Pull
1000 lb. Draw Bench. 50 ft. Pull—New 1956
10.000 lb. Draw Bench. 50 ft. Draw—LATE
FORGING MACHINES
1" to 5" Acme. Alax. National
1" to 5" Acme. Alax. National

1" to 5" Acme. Ajax. National HAMMERS—BOARD DROP—STEAM DROP—STEAM FORGING 860 lb. to 12.090 lb. incl.

LEVELERS-ROLLER 54" McKay 17 Rolls 4\%" dia. 60" Aetna Standard, 17 Rolls 4\%" dia. 72" McKay, 15 Rolls 4\%" dia. 84" Bilss 17 Rolls 5\%" dia. PRESSES-HYORAULIC

RESSE—HYDRAULIC
300 ton Southwark. Bed 28" x 28". Stroke 25"
500 ton Watson Stillman Piercing Press 48" x 72"
500 ton HPM Fastraverse, Bed 36" x 36"
600 ton Birdsboro, Platen 48 x 48", 15" Stroke
1000 ton HPM Fastraverse, Bed 48" x 72", 36" Stroke
4590 ton Bi-L-H Bed 68 x 68", Stroke 40"

32' x %" BALDWIN PYRAMID TYPE BENDING ROLL Air Actuated Drop End 2 Motors—60 & 40 H.P. A.C. NEW 1742

PUNCH & SHEAR COMBINATIONS

Buffalo #1½ Ironworker Cleveland Style C; Arch Jaw. Capy. %" x %" ROLLING MILLS

Colling Mills

of x 5" Torrington Flat Wire Mill Line
25% x 9" x 9" 4-High Strip Mill
35% x 7" Str Roll Cluster Mill
10" x 14" Single Stand Two High
10" x 16" Single Stand Two High
12" x 12" Single Stand Two High
12" x 14" Single Stand Two High
27" x 36" Single Stand Two High
ROLLS—FORMING

A. T. HENRY & COMPANY, INC.

50 CHURCH ST. NEW YORK CITY B Telephone COrtlandi 7 3437

6 Stand Dahlatrom #450-6 for stock to 4½" wide up
18 11 62.

18 11 62.

18 11 62.

18 11 62.

18 11 62.

18 11 62.

18 11 62.

18 11 62.

18 11 62.

18 11 62.

18 11 62.

18 11 62.

18 11 62.

18 11 62.

18 11 62.

18 11 62.

18 11 62.

18 11 62.

18 11 62.

18 11 62.

18 11 62.

18 11 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 62.

18 12 ewaging machines x 12 in SA1

#4A Standard 2-Die, Capy 23% Tube
#6% Fenn Capacity 3% Tube 1% Sol
10" Die Length Hydraulic Feed, LATE
TESTING MACHINES
20,000 lb. Baldwin Univ. Hydraulic
50,000 lb. Baldwin Southwark Compression
10#E REDUCERE
11% Tube Reducer for steel
25% Tube Reducer for steel
25% Tube Reducer for aluminum 1% Tube Reducer for aluminum
WIRE DRAWING MACHINE
Type B Morgan 4-Block Capy. \$5 Bod down

• Manufacturing

Confidential Certified Appraisals Liquidations - Bona Fide Auction Sales Arranged

CIRCUIT BREAKERS In Stock

11-600 a.-15000 V-F-100-100 MVA. 1.C. in cubicle, 24x50x114, Sol. 250 V.

3-600 a.-15000 V-F-100-100 MVA. I.C. in cubicle-36x54x116-Manual.

1-600 a.-15000 V-B-20-B 150 MVA. 1.C. Draw out cubicle—Sol. operated. Many others.

For listings of Motors, Generators, Transformers, M-G Sets, Rectifiers, Mill Motors, etc., See last week issue.

> Do you Receive our Stock List? Send us your requirements.

Write - Phone - Wire

BELYEA COMPANY, Inc.

FASTER

47 Howell St., Jersey City, N. J. Tel. Oldfield 3-3334

COMPRESSORS

America's dominant medium for Compressors-AMERICAN

for Compressors—AMERICAN

100 CFM 123 pal 6 x 7 lng, cFe-1.
286 CFM 100 pal 7 x 7 lng, cFe-1.
286 CFM 500 pal 10-45/x x 10 lng.
485 CFM 500 pal 10-45/x x 10 lng.
485 CFM 100 pal 12 x 11 lng.
500 CFM 120 pal 12 x 11 lng.
500 CFM 120 pal 12 x 12 lng. 3-60-4180.
500 CFM 100 pal 125/x 12 lng. 3-60-4180.
500 CFM 100 pal 125/x 12 lng. 3-60-4180.
500 CFM 100 pal 125/x 12 lng. XRB-Werth.
500 CFM 100 pal 13-10 x 10 parth.
500 CFM 125 pal 17-10/x x 12 lng. XRB-Werth.
500 CFM 125 pal 17-10/x x 12 lng. XRB-Werth.
500 CFM 125 pal 17-10/x 12 lng. XRB-Werth.
500 CFM 100 pal 13-11 x 12 log HP 3-60-440.
500 CFM 125 pal 10-10 x 7 lng. XRB-Werth.
500 CFM 125 pal 10-10 x 7 lng. XRB-Werth.
500 CFM 125 pal 10-10 x 10 lng. XRB-Werth.
500 CFM 125 pal 10-10 x 10 lng. XRB-Werth.
500 CFM 125 pal 10-10 x 10 lng. XRB-Werth.
500 CFM 125 pal 10-10 x 10 lng. XRB-Werth.
500 CFM 125 pal 10-10 x 10 lng. XRB-Werth.
500 CFM 125 pal 10-10 x 10 lng. XRB-Werth.
500 CFM 125 pal 10-10 x 10 lng. XRB-Werth.
500 CFM 125 pal 10-10 x 10 lng. XRB-Werth.
500 CFM 125 pal 10-10 x 10 lng. XRB-Werth.
500 CFM 125 pal 10-10 x 10 lng. XRB-Werth.
500 CFM 125 pal 10-10 x 10 lng. XRB-Werth.
500 CFM 100 pal 10-11 x 12 lng. XRB-Werth.
500 CFM 100 pal 10-11 x 12 lng. XRB-Werth.
500 CFM 100 pal 10-10 x 10 lng. XRB-Werth.
500 CFM 100 pal 10-10 x 10 lng. XRB-Werth.
500 CFM 100 pal 10-10 x 10 lng. XRB-Werth.
500 CFM 100 pal 10-10 x 10 lng. XRB-Werth.
500 CFM 100 pal 10-10 x 10 lng. XRB-Werth.
500 CFM 100 pal 10-10 x 10 lng.
500 CFM 100 pal 10

AMERICAN AIR COMPRESSOR CORP.

DELL & 48TH STREET NORTH BERGEN, N. J. Telephone Union 5-4848

1500 HP D.C. MOTORS

1500 HP-525 volts D.C.-600 R.P.M.-NEW-2bearing continuous duty motors—manufactured by Westinghouse. In original crates. From Nevy Destroyer Escort. SPECIFICATIONS: 2-bearing 1500 HP -525 volts DC-2270 amps-600 RPM-ambient tem-perature 40° C-class 8 insulation-2-bearing pedestal sleeve type—shunt wound—of iciency 94.23%. ONLY 6 AVAILABLE-BUY NOW AND SAVE. Suitab'e for steel mill drive-offshore oil rigs-rolling mill drive-dredge pump applications.

THE BOSTON METALS CO.

313 E. Baltimore St. Baltimere 2, Md. LEXINGTON 9-1900 **ELGIN 5-5050**

500 TONS OF UNUSED 100# ARAA RAIL IN STOCK ATTRACTIVE PRICE QUOTED M. K. FRANK

480 Lexington Ave. New York 17, N. Y. 481 Park Bidg., Fifth Ave. Pittsburgh 22, Penna.

GUARANTEED MOTORS - MG SETS GENERATORS HOISTS - COMPRESSORS - TRANSFORMERS UNITS OF EVERY SIZE AND DESCRIPTION

Surplus Mfg. Equipment Inventories Purchased

Consulting Engineering Service

Equipment

SQUIRREL CAGE MOTORS

3 phase, 60 sycle, 220 or 440 volts (*2300 volts or higher)

	,	arre as nighter?	
H.P.	MAKE	TYPE	SPEED
1750	*G.E.	K	1800
1250	*Al-Ch	ANX	3600
600	West.	CS	720
600	*G.E.	K-63458	1200
500	*G.E.	K-63458	1200
500	*G.E.	1K-13A	900
350	*G.E.	KT-559-A	1800
300	*West.	C8-1002	800
250	*West. (TE)	CS-81208	1800
250	*G.E.	KT-559-8	1800
250	*West.	C8-873-8	1800
250	Breek	RS-28	1200
250	West.	CS-1000	720
200	*G.E.	FT-549	3600
200	*G.E.	1-K-13B	1809
200	West.	CSP-581-8	1800
200	Breek	RS-27	1200
200	G.E.	K-6334-8	1175
200	"West.	C8-939-A	900
200	G.E.	KT-564-8	720
200	*Al-Ch	AN-87-G	720
200	"West.	C8-1010	600
200	Al-Ch	ARW-631	600
150	Cr-Wh	8C-149	3800
150	AI-Ch	AN-30-F	1200
150	West.	CSP-5815	1200
156	*G.E.	KT-558	1200

SPECIAL NEW WESTINGHOUSE

| Single Step. Primary resistance magnetic Squirrel Cage Motor Starter 3/80—Class II-400. Size 5. QUA | PRICE I0 190 \$1073.09 | 1175.00 |

WE'LL SELL, BUY OR TRADE phone CAnal 6-2900



CHICAGO Electric Co.

1335 West Cormok Road . Chicago 8, III.



LIFTING MAGNETS

A complete magnet service. Magnets, new & rebuilt, generators, controllers, reels, etc.

Magnet specialists since 1910

Goodman Electric Machinery Co. 60 Broad St. Newerk 2, N. J. 1040 Broad St.

eastern Rebuilt Machine Tools

THE SIGN OF QUALITY—THE MARK OF DEPENDABILITY

SAWS
No. 48 Robertson Economy, m.d., new
No. 4XB Robertson Economy, m.d., new
No. 32B Cochron Bly Saw, m.d., latest
Model 102, Type JCAW, Cincinnati Elec. Tool
& Abrasive Cut-off, m.d.
Model 401, Cutomatic Abrasive Cut-off, m.d.
U 13 Peerless Universal Type H.S. Metal Saw,

m.d. 6x6" Peerless High Duty Hydraulic Standard,

SHAPERS

SMAPERS
6" Pratt & Whitney M1506, Model B Vertical
12" Rockford Universal Hydraulic, flanged, m.d.
12" Hendey Universal Back Geared, m.d.
24" American Standard Pattern Auto-Oiled

24" American Standard Pattern Auto-Oiled Plain Shaper, m.d.
24" Rockford Hydraulic, m.d.
22" Morton Draw-Cut, m.d., late
32" Ohio, m.d.
32" Chicinanti, m.d., late
36" Rockford Universal Openside Shaper-Planer,

38" Morton Punch Cut Shaper, m.d. SHEET METAL MACHINERY

No. 2 Libert Nibble, 28" throat No. 3-%" capacity Gray Sheet Metal Cutter, m.d.

No. 11-SBC Buffalo Armor Plate Bar Cutter,

m.d. Model 1236 Libert High Speed Nibbler Type

Shear, m.d. Rotary Bevel Shear No. 3 Ryerson Rotary Bevel Shear Model 4510-D Dreis & Krump "Chicago" Steel Press Broke No. 5 Hilliss & Jones Pyramid Type Bending Roll PRESSES

PRESSES
No. 4 Stevenson O.B.I. Punch Press, direct geared flywheel drive
No. 6 Verdin, Kappes & Verdin Straight Side
No. 6 Toledo Single Geared Open Back Inclinable Punch Press, m.d.
No. H3 Niagara Horn Press, single back gear
No. 50-5-84 Minster Straight Side Double Crank
Single Geared Press, belt drive
No. 1641/2 Toledo Toggle Drawing & Deep
Stamping
7/2 ton French Oil Mill Machine Co. Straightening, m.d., 1942
100 ton Wood Model 8220 Vertical Hydraulic,
4 col., single action-down
Type S750 Hennifin Hydraulic Straightening m.d.
Model H Cleveland O.B.I. Punch Press, belt
drive

drive
No. 3AA Canco (American Can Co.) Open
Back Inclinable Punch Press, m.d.

We carry on average stock of 2,000 muchines in our 11 acre plant at Gacianati. Visitors welcome at all times

THE EASTERN MACHINERY COMPANY

1002 Tennessee Avenue, Cincinnati 29, Ohio

MElrose 1241 "TWX" CI 174

CABLE ADDRESS-EMCO

BAR STRAIGHTENER KANE & ROACH

2 Roll Type Capacity 31/2" Rounds Anti-Friction Bearing Direct Coupled Drive

IMMEDIATE DELIVERY

LANG MACHINERY COMPANY, INC.

28th St. & A.V.R.R. Pittsburgh 22, Pa. GRant 1-3594

Keep 'em rolling . . . not rusting FOR SALE

New-Used-Reconditioned railroad freight cars • car parts • locomotives • tank cars • steel storage

MARSHALL RAILWAY EQUIPMENT

Corporation

328 Connell Building, Scranton 3, Pennsylvania Diamond 3-1117 Cable MARAILQUIP

,.... IMMEDIATE DELIVERY

ALL TYPES

RAILWAY CARS

AND LOCOMOTIVES FOR SALE

RECONDITIONED OR "AS IS" Freight car repair parts, relay rails,

cross-ties, accessories **MORRISON RAILWAY** SUPPLY CORP.

Rand Bldg.—BUFFALO 3, N. Y. Phone: MOhawk 5820

BOUGHT & SOLD

ENGINEERED TO

YOUR REQUIREMENTS

Ornitz Equipment Corp.

Industrial Engineering Service

NEvins 8-3566

Brooklyn 38, N. Y.

FOR SALE

COMPLETE STRIP ROLLING MILL

Late Type, Still Set-Up in Plant

BLISS 4 Stand Tandem, continuous strip mill, rolls 16" diameter x 24" face. Individual 250 h.p. D.C. variable speed motors & controls. Equipped with motor driven recoiler

NATIONAL MACHINERY EXCHANGE

126 Mott St. New York 13, N. Y. CAnal 6-2470 ······

FOR SALE

FREIGHT CAR REPAIR PARTS RELAYING RAILS & ACCESSORIES STEEL STORAGE TANKS CARS & LOCOMOTIVES CONTRACTOR EQUIP. & MACHINERY

THE PURDY CO.

8754 S. DOBSON AVE.

CHICAGO 19, ILL. — BA. 1-2100 ALSO ST. LOUIS, MO., SAN FRAN. AND LONG BEACH, CALIF.

WORLD'S LARGEST STOCK STAMPING PRESSES

SQUARING SHEARS . PRESS BRAKES REBUILT and GUARANTEED

WILL LEASE WITH OPTION TO PURCHASE, OR WILL FINANCE OVER LONG TERM

JOSEPH HYMAN & SONS

Tioga, Livingston & Almond Sts. Philadelphia 34, Pa. Phone GArfield 3-8700

OFFERING

BRIDGE CRANES

ARNOLD HUGHES COMPANY

2765 Penobscot Bldg. Detroit, Mich. WOodward 1-1894



Harry E. Miles, Jr.

ALL USED MACHINE TOOLS ARE NOT THE SAME!

I've been active in the firm for only seven years, but I sure know that all used machine tool are not the same. If you want the best, you've got to start with good used tools. tear them down to the bare frame and then rebuild them right from the base on up! And that's what we do here at Miles—we've been doing it for 38 years and know how. That's why we guarantee all Miles rebuilt machine tools An exceptional listing of late type upsetters from stock.
2" National susp. slides
3" Ajax susp. sl., air clutch, 1936
3" National Air clutch, 1936
4" National air clutch, 1944
4" National air clutch, 1944
4" National air clutch, 1944
PRESSES

PRESSES

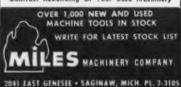
70 ton No. 10-7 Minster 90 ton No. 75 Bliss horning 106 ton No. 55 Toledo s.s.c. trim side shear 126 ton No. 561/2 Toledo s.s. air clutch, 1942 370 ton No. 185 Cleveland s.s.c. 600 ton No. 644 Toledo knuckle coining

BOLLS IL Kane & Roach vert. angle bending No. 18 Kane & Roach straightening roll, 21/2"

MISCELLANEOUS
BULLDOZER, 180 hon No. 27 Williams & White
BOLT SHAYER. Type KK Economy, hopper
HAMMER, 250 lb. Nazel pneumatic
FUNCH & SHEAR. 38" throat new Doty
MILLER, 42" x 42" x 18' Ingersoll, adj. rail
LATHE, 90" Beth-Bridgeford headstock, 1941
SAW. 10½" x 10½" No. 3 Motch & Merryweather, hydraulic, 9 feeds, late
COIL CRADLE. Cleveland uncoilers, 72" wide

10

Write for complete new stock list No. 209 Contract Rebuilding Of Your Used Machinery



595 Bergen St.

FOR SALE OR RENT

- 50 Ton American Diesel Locomotive Crane, New 1944. Caterpillar D-17000 Engine. 15 KW Magnet Generator.
- 30 Ton Browning Diesel Loco. Crane.

ŧ

- 65 Ton Whitcomb Diesel Elec. Loco. New 1943. Reconditioned. Cummins Engines. Like New. 44 Ton Gen. Elec. and Whitcomb Diesel Elec. Locos. 4 Traction Motors. Heavy Duty.
- 50 Ton American Guy Derrick, 115' Mast, 100'
- 60 Ton Link Belt K-595 Lifting Crane. 120' Boom. Cat. D-17000 Diesel.

WHISLER EQUIPMENT CO.

1910 Railway Exchange Bidg., St. Louis 1, Mo. CHestnut 1-4474

Locomotives & Locomotive Cranes

- 1—25 Ton Diesel Electric Locomotive 1—45 Ton G. E. Diesel Electric Locomotive 1—25 Ton Ohio Diesel Locomotive Crane 1—30 Ton Browning Diesel Locomotive Crane 1—25 Ton Bay City 190T61 Truck Crane
- B. M. WEISS COMPANY Philadelphia 2, Pa.

MACHINES FOR YOUR YARD

American car pullers Insley K-12 dragline Pioneer 30"x200' conv Instey N-12 drugtine
Pioneer 30"x200' conveyor
Michigan truck crane T-6K
Lorain 20 ton truck crane
5x8 Tandem Telsmith d.d. screen
TRACTOR & EQUIPMENT CO.
006 Southwest Highway, Oak Lawn, III.

FOR SALE

MONEL BARS-30,000 POUNDS 1% Inch Hexagon in Mill Lengths. Attractive Price

ADDRESS BOX G-793 Care The Iron Age, Chestnut & 56th Sts., Phila, 39

Bliss #71/2-96 Power Press 242 Ton Cap.

New 1946 straight side, double crank, Marquette air cushion, bed area 60 x 96, extra new parts. Immediate Delivery.

MORTON MACHINERY, INC. 45 Broadway, Bklyn., N. Y.

U.NIVERSAL Machinery & Equipment Co.

AMERICA'S LARGEST STOCK OF FOUNDRY EQUIPMENT

ARC MELTING FURNACES

ARC MELTING FURNACES

1—250# LECTROMELT—300 KVA

1—500# LECTROMELT—2300/3/60

1—1000#/hr, 5 dia.—500 KVA, 4160/3/60

1—3000# HEROULT—1200 KVA, 2300 V.

1—6000# LECTROMELT—2500 KVA

1—6000# SWINDELL Top Charge—Late

1—6 dia. WHITING Duplexing, 8 ton/hr.
DETROIT FURNACES—10 lb. to 3000 lb. Cap.

INDUCTION MELTING FURNACES

1— 3 KW AJAX, Lab Type 1— 20 KW AJAX Spark Gap, High Freq. 1—333 KW AJAX 1000# Steel

HEAT TREAT FURNACES

BARGAIN

4' x 4' x 10' Gas Fired Furnace 1—3' x 3' x 6' deep TATE JONES, gas fired 1800°F. 1—20"x56" L&N electric hardening

CLEANING EQUIPMENT AND GRINDERS

1—36" Continuous WHEELABRATOR w/loader

1—36x42 WHEELABRATOR w/loader

1—36x42 WHEELABRATOR w/loader

1—48x42 WHEELABRATOR w/loader

1—48x42 WHEELABRATOR w/loader

1—AMERICAN ±1 Plain Table

1—PANGBORN Type ES-421 Shell Blast. Mach.

1—PANGBORN TABLAST, 8" Table

5—SLY Tumbling Barrels, 40" dia. x 62" L

10—5 to 15 Hp Hevi-Duty, Double End Grinders

1—MARSCHKE 10 HP Swing Frame Grinders

CLEANING EQUIPMENT AND GRINDERS

. . . SPECIAL . . .

HOUGH Model HA Paylonder, 1000 lb. capacity, hyd. lift, hydraulic dump, pneumatic tires 200,000± BALDWIN Hydraulic Universal Tensile Testing Machine

2—Willing #7 Cupolas, 7 ton capacity, 72" shell dia., 55" high—Complete. NEW—FRACTION OF COSTI

1630 NORTH NINTH ST. READING, PA. PHONE FRANKLIN 3-5103

WHIRLEY CRANE FOR SALE

American Model 685, electric, with traveling gantry, 75° boom 150 HP, excellent, immediate shipment.

George M. Meriwether, Inc. 1712 7th Ave. No. FA 4-2450 Birmingham

SALT BATH ELECTRODES

IES Crusible Rezistal 2440 (20%Cr)
Unused. Several sizes.
8 Ajaz SSC-1541 25874221-2
Ajaz Transformer, 105 KW. Ser. 52508B
Ajaz Elevirie Furnace Parks, New
508,000 lbs. WELDING ELECTRODES, WIRE

LESCO PRODUCTS CO.

DIESEL ELEC. LOCOMOTIVES

19 Gen. Elec. 25, 45, 65, 80 & 100 ton 1 Alcoa 100 ton. 3 Whitcomb 65 ton Plymouth 30 ton 36 in. Ga. 3 G.E. 30 ton 42 in. Ga. All make Locomotives Bought & Sold STANHOPE 60 E 42nd St., N. Y. 17, N. Y.

FRACTIONATING COLUMN

78' High, 36 Plates, Heat Exchangers, Decanter, etc. Suitable distilling 100,000 gals./month light oil from coke ovens, refinery, organic solvents. 20 NEW G.E. ARC WELDERS, 200, 300 AMP.

PROCESS EQUIPMENT SALES CORP.

FOR SALE

500.000 # Titanium Turnings

ACME IRON & METAL CO. 15725 Saranac Rd. Cleveland 10, Ohio WILMINGTON, DELAWARE

SURPLUS REAL ESTATE OF THE

PULLMAN COMPANY
200,000 sq. ft. ground level spaces. 20 acres prime
land. Penna. R.R. alding & river frontage. New
Power house. Good cendition. Ready to use or valuable investment for subdivision. For browhurs with ARNOLD GOLDSBOROUGH, Realter 9 E. 12th St., Wilmington, Dol.

CONTRACT MANUFACTURING

WANTED

METAL PRODUCTS TO MANUFACTURE

Large, well equipped, well capitalized, sheet metal, light plate and structural shop is seeking assemblies or sub-assemblies to manufacture.

Plant has 170,000 sq. ft. of floor space and is centrally located in highly indus-trialized area. Equipment for square and trialized area. Equipment for square and rotary shearing, stampling (presses up to 200 tons), rolling, brake-forming, spot and seam-welding, manual arc, heliarc, sigma and unimelt welding, angle tube and bar forming, spray or dip painting, adequate packing and rail facilities available. Practically no physical limitations as to

ADDRESS BOX G-775

Care The Iron Age, Chestnut & 56th Sts., Phila, 39

SCREW MACHINE **PRODUCTS**

Made to your specifications and tolerances. From smallest up to 25%" diameter in steel, brass and aluminum.





OLSON MANUFACTURING CO.

101 Prescott St., Worcester, Mass.

length, height or weight of product.

CONTRACT MANUFACTURING

This section appears in the first and third issue each month. Contract Manufacturing listings carry the announcements of plants offering specicialized experience and facilities for the production of STAMPINGS, SPINNINGS, WELDMENTS, WIRE FORMS, SPRINGS, SCREW MACHINE PRODUCTS, FORGINGS, CASTINGS, GEARS, DIES, ASSEMBLIES, SPECIAL MACHINERY, and services such as MACHINE WORK, HEAT TREATING, PLATING, GALVANIZING, etc.

THE DIRECTORY OF PRODUCTION SERVICES

For advertising rates, kindly write The IRG.. AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.

AVAILABLE! COMPLETE PRODUCTION FACILITIES

Complete facilities in greater Chicago area now available for production work on large steel castings and forgings, big structural units, heavy machining and assembly work. Plant manned by skilled workmen accustomed to working to close tolerances. Fully-equipped tool room and tool design facilities.

STEEL FOUNDRY with open hearth and electric furnaces with capacity of 1,500 tons per month. Can handle 25-ton castings.

BRASS FOUNDRY—Capacity, 100 tons per month. Can handle single castings to 1,300 lbs.

OPEN HAMMER FORGE SHOP with manipulator capacity of 6,000 lbs.

MODERN HEAT TREAT-ING AND ANNEALING DE- PARTMENT with both oil and water quenching facilities.

ERECTING-42,000 sq. ft. of floor space.

HEAVY MACHINING—Modern machine tools include 72" x 264" engine lathe and 11' x 50' planer. Also, vertical and horizontal boring mills, gear cutters to 18' dia., etc.

FABRICATING — Shearing, rolling, and brake-forming equipment; complete welding shop including 50-ton positioner.

WE WELCOME YOUR INQUIRY!

ADDRESS BOX G-796, Care The Iron Age, Chestnut & 56th Sts., Philadelphia 39.

MEEHANITE® METAL CASTINGS

ROUGH OR MACHINED ONE TO 60,000 POUNDS FOR

STRENGTH - ABRASION CORROSION OR HEAT

ROSEDALE

FOUNDRY & MACHINE CO.

1735 PREBLE AVE., PITTSBURGH 33, PA.

DROP FORGINGS

Special Forgings of Every Description.
We solicit your prints or model for quotation.

Wilcox Forging Corporation
Mechanicsburg Penns

DROP FORGINGS

Special Forgings—High Quality, Fast Delivery For prompt attention phone or send prints to John Bello.

CARCO INDUSTRIES, INC. 7341 Tulip Street, Phila. 35, Pa. DEvanshire 2-1200

PIT-MOLDED CASTINGS

... a specialty in our MEEHANITE foundry. We can handle any size casting from 5 to 26,000 pounds, rough or machined to your specifications. (MEEHANITE properties lie between cast iron and steel.)

Our shaps are also equipped for:

- LARGE PATTERN MAKING
- . HEAVY PLATE STEEL FABRICATION
- MACHINE SHOP FACILITIES
- PRODUCTION AND ASSEMBLY OF CUSTOM-BUILT MACHINERY

HARDINGE MANUFACTURING CO.

240 Arch Street York, Pennsylvania Phone 33821

DROP FORGINGS

To Your Specifications
Prompt Quotations
BALDT ANCHOR CHAIN & FORGE DIVISION
P. O. Box 350—Chester, Pennsylvania

THE FORMULA:

Multi-operation presses plus Yankee skilled workmen over

Eighty years manufacturing know-how equals Low cost metal stampings And precision assemblies To meet your needs

The GREIST MANUFACTURING CO. 646 Blake St., New Haven 15, Conn.

Special Washers

We carry in stock Silicon killed steel specially suited for case - hardening. Stock dies for producing washers from .0015 to 3/2" thick.

Thomas Smith Company 204 Grove St., Worcester, Mass.

SPECIAL MACHINERY

DIAMITE Abracive Resistant Castings NI-RESIST Heat & Corrosion Resistant Castings P M G BRONZE High Strongth Acid Resistant Castings

Fully Equipped—Pattern Foundry & Machine Shop Facilities—Castings to 15 tons Weatherly Foundry & Mfg. Co., Weatherly, Pa.

Nepsco New England Pressed Steel Company

Contract Manufacturer since 1916
METAL STAMPINGS
SPECIALTIES — APPLIANCES

For Industrial and Domostic Soors

NATICK

P. O. BOX 29 MASSACHUSETTS

12

AUTOMATIC MILLED PARTS

Automatic continuous holding unit allows small parts to be milled at speeds of 3000 parts per hour with cost reductions of 50 to 75%.

SIEBURG INDUSTRIES, INC.

CLEARING HOUSE

That "hard-to-find" machine for which you have been searching may be listed in this very issue. Look through The IRON AGE Clearing House each week.

Let us quote on STAMPINGS and ASSEMBLIES from drawing or sample

Drilling . . . Blanking . . . Riveting . . Forming . . . Tapping . . . Welding . . . Toolmaking of course COMPLETE DESIGN AND DEVELOPMENT FACILITIES

HUEBEL MFG. CO., INC. 763 Lexington Ave. Kenilworth, N. J.



SINCE

DROP FORGINGS

Small drop forgings up to one pound in size. Inquiries invited for very prompt action.

KEYSTONE FORGING COMPANY

Northumberland

Pennsylvania

GReenwood 3-3525

EQUIPMENT AND MATERIALS WANTED

WANTED **SURPLUS STEEL** WALLACK BROTHERS

7480 S. Demon Ava.

Chicago 34, IIII

WEISS STEEL CO. INC.

600 WEST JACKSON BLVD. CHICAGO 6, ILLINOIS Buyers of Surplus Steel Inventories 39 Year's of Steel Service

Try the

WANTED SECTION

for "Hard-to-Find" Materials or Equipment.

WANTED BRIDGE CRANES

ARNOLD HUGHES COMPANY 2765 PENOBSCOT BLDG. DETROIT, MICH. WOodward 1-1894

WANTED **Used Boiler Tubing**

IMPERIAL PIPE & SUPPLY CO. 2750 E. Washington Blvd. Los Angeles 23, California ANgelus 8-7271

Surplus Steel Wanted Bars-Sheets-Plates-Structurals PARKER STEEL COMPANY

4239-41 Monroe St., Toledo 13, Ohio

SURPLUS STEEL

WANTED

Structurals, Plate, Pipe and Tubing Consumers Steel & Supply Co.

P. O. Box 270, RACINE, WISCONSIN

WANTED EXTRUSION PRESS

Will purchase for cash 2500, 2750, 3000, or 4000 ton hydraulically operated horizontal extrusion press. Prefer unit with separate accumulator station. Must be priced right. Submit full details in first letter to

ADDRESS BOX G-794 Care The Iron Age, Chestnut & 56th Sts., Phila. 39

EMPLOYMENT EXCHANGE

HELP WANTED

SITUATION WANTED

MANUFACTURING EXECUTIVE: Administrator and organizer. Directed all areas of operation in jobbing and mass producing sheet metal items. stampings, structures, weldments, pressure vessels, machinery, and tools. Successful in technological advancement, costing, material and production controls, all elements Plant and Industrial Engineering, manufacture, etc. College educated. Qualifiled by experience Works Manager to V.P. Operations any size company. Please specify interest. Address Box G-797, Care *The Iron Age*, Chestnut & 56th Sts., Philadelphia 39.

1

EMPLOYMENT SERVICE

HIGH GRADE MEN-Salaries \$5,000 to \$25,000. Since 1915 thousands of Manufacturing Executives, Engineers, Sales Managers, Comptrollers, Accountants, and other men of equal calibre have used successfully our confidential service in presenting their qualifications to employers. We handle all negotiations. Submit record with inquiry. The National Business Bourse, 20 W. Jackson Blvd., Chicago 4.

ESTIMATOR WANTED

Care The Ir

Experienced Heavy Steel Mill Equipment. Exceptional Opportunity. Apply The Aetna-Standard Engineering, 14th Floor, Frick Bldg., Pittsburgh, Penna.

GRADUATE METALLURGIST WANTED

Graduate Metallurgist, not over 35, with degree in Metallurgy or Metallurgical Eng. Must have Ferrus bankground and several years experience, preferrably in electric furnase shop producing rolled product. Dutles grimmily in production and development and will include test evaluation.

as primarity in the natural control of the control

BLAST FURNACE SUPERVISOR

Experienced blast furnace operator to asist in start-up and initial operation of new furnace located in Spain. Duration of job is new year; however, applications for permanent position will be considered.

Call or write Keppers Company, Inc., Freyn Department, Pittsburgh 19, Pennsylvenia

STEEL MILL METALLURGISTS

Graduate metallurgists with steel mill ex-perience are needed for our Metallurgical Department.

Doubled ingot capacity from our NEW OXYGEN STEEL MAKING FURNACES pre-OXYGEN SIZEL MAKING FURNACES pre-sent challenging opportunities in produc-tion, quality control and customer service fields. Positions are open for experienced men as well as recent college graduates.

Send complete resume now if your in-terests and qualifications meet these re-

Employment Manager

KAISER STEEL

CORP.

P. O. Box 217

Fontana, California



ADVERTISERS IN THIS ISSUE

An asterisk beside the name of advertiser indicates that a booklet, or other information, is offered in the advertisement. Write to the manufacturer for your copies today.

Acme Iron & Metal Co	Baldwin-Lima-Hamilton Corp 49
Acme-Newport Steel Co	MacCabe, T. B., Co
Aetna-Standard Engineering Co.,	Bliss Co
*Allegheny Ludium Steel Corp 52	
American Air Compressor Corp., 153 American Steel Foundries	Marinali Kaliway Equip. Corp. 154 Meriwether, George M., Inc. 155 *Metal Carbides Corp. 37 Metal Treating Institute 48 Miles Machinery Co. 154 Morrison Railway Supply Corp. 154 Morrison Railway Supply Corp. 154 Morrison Marchinery Leg. 155
Elmes Engineering Div 21	Metal Treating Institute 48
American Steel & Wire Div.,	Morrison Railway Supply Corp 154
Elmes Engineering Div. 21 American Steel & Wire Div., United States Steel Corp. 27 *Apex Machine & Tool Co. 113 Arcos Corp. 128 & 129	Morton Machinery Inc
Arcos Corp	Notional Automatic Tool Co 30 8 31
*Armco Steel Corp 6 *Armstrong Bros. Tool Co 137	National Business Bourse, Inc 157
Baldt Anchor, Chain & Forge	National Machinery Exchange 154 National-Standard Co 43
Div 156	National Tube Div. United States Steel Corp. 27 New England Pressed Steel Co. 156 New Jersey Zinc Co., The. 74 New Rochelle Tool Corp. 23 Niagara Machine & Tool Works 48 Norton Co., Abrasive Grinding Wheel Div. 91
*Baldwin-Lima-Hamilton Corp., Loewy-Hydropress Div 49	New England Pressed Steel Co 156
Belyea Co., Inc	New Jersey Zinc Co., The
Bertsch & Company	*Niagara Machine & Tool Works 68
Boston Metals Company 153	Wheel Div
*Bridgeport Brass Co 29	*Oakite Products, Inc
Byers, A. M., Co 89	*Oakite Products, Inc
*Carborundum Co., Refractories	
Carco Industries, Inc 156	*Osborn Mfg. Co., The,
Carlson, G. O., Inc	Ottemiller, Wm. H., Co
*Corporter Steel Co The Allow	Parker Steel Co 157
Tube Division	*Perkins Machine & Gear Co 131 *Pittsburgh Engineering & Machine
Chase Brass & Copper Co 126	*Pittsburgh Engineering & Machine Div. of Pittsburgh Steel Foun- dry Corp. 4
Chicago Electric Co 153 Chicago Screw Company, The 5	Pittsburgh Steel Co38 & 39
*Cleveland Crane & Engineering	Process Equipment Sales Corp 155
Climax Molybdenum Co 70	Pittsburgh Steel Co
Colorado Fuel & Iron Corp., The	Purdy Company, The 154
Columbia-Geneva Steel Div	Reading Crane & Hoist Corp. 90 Reliance Electric & Engineering Co
United States Steel Corp 27 Consumers Steel & Supply Co 187 *Copperweld Steel Co.,	CoInside Back Cover
*Copperweld Steel Co.,	*Rhode Island Tool Co 42
Aristoloy Steel Division Inside Front Cover	Roebling's, John A., Sons Corp. 125 Rosedale Foundry & Machine Co. 156
*Crucible Steel Co. of	*Ruthman Machinery Co., The 114
America	*Ruthman Machinery Co., The 114 Ryerson, Jos. T., & Son, Inc 134
*DeLaval Steam Turbine Co 93 *Dravo Corporation	Salem-Brosius, Inc. 67 *Sandusky Foundry & Machine Co. 20
Dreis & Krump Mfg. Cp	AC 1-1 P 1 P 1
Dreis & Krump Mig. Co 13	Scioky Bros., Inc
Eastern Machinery Co., The 154	Sieburg Industries, Inc. 156 Smith, Thomas, Co. 156
Eastern Machinery Co., The 154	Scioby Bros. Inc. 32
Eastern Machinery Co., The 154 Eastern Co. & Construction Co 86 *Electric Furnace Co	Sciaky Bros., Inc. 32 Sieburg Industries, Inc. 156 Smith, Thomas, Co. 156 Somers Brass Co., Inc. 9 Stamco, Inc. 116 Stanhope, R. C., Inc. 155
Eastern Machinery Co., The 154 Easton Car & Construction Co 66 *Electric Furnace Co 132 Electro Metallurgical Co. Div. of Union Carbide Corp 78 Erie Forge & Steel Corp 17	Sciony Bros., Inc. 32 Sieburg Industries, Inc. 156 Smith, Thomas, Co. 156 Somers Brass Co., Inc. 9 Stamco, Inc. 116 Stanhops, R. C., Inc. 155
Eastern Machinery Co., The 154 Easton Car & Construction Co 66 *Electric Furnace Co 132 Electro Metallurgical Co. Div. of Union Carbide Corp 78 Erie Forge & Steel Corp 17	Sciony Bros., Inc. 32 Sieburg Industries, Inc. 156 Smith, Thomas, Co. 156 Somers Brass Co., Inc. 9 Stamco, Inc. 116 Stanhope, R. C., Inc. 155 Standard Screw Company 5 Steel & Tube Div., The, Timken Roller Bearing Co. 54
Eastern Machinery Co., The 154 Easton Car & Construction Co 66 *Electric Furnace Co 132 Electro Metallurgical Co. Div. of Union Carbide Corp 78 Erie Forge & Steel Corp 17	Sciony Bros., Inc. 32 Sieburg Industries, Inc. 156 Smith, Thomas, Co. 156 Somers Brass Co., Inc. 9 Stamco, Inc. 16 Stanhope, R. C., Inc. 16 Stanhope, R. C., Inc. 15 Standard Screw Company 5 Steel & Tube Div., The Timken Roller Bearing Co. 54 Steelweld Div., The Cleveland Crane & Engineering Co. 26
Eastern Machinery Co., The 154 Easton Car & Construction Co 66 *Electric Furnace Co 132 Electro Metallurgical Co. Div. of Union Carbide Corp 78 Erie Forge & Steel Corp 17	*Sandusky Foundry & Machine Co. 20 *Scioky Bros., Inc
Eastern Machinery Co., The. 54 Eastern Car & Construction Co. 86 *Electric Furnace Co. 52 Electro Metallurgical Co. Div. of Union Carbide Corp. 78 Erie Forge & Steel Corp. 17 Finkl, A. & Sons Co. 45 Foote Mineral Co. 330 *Formed Tubes Inc. 112 Foster, I. B., Company 153 Frank, M. K. 153	Tennessee Cool & Iron Div.,
Eastern Machinery Co., The. 54 Eastern Car & Construction Co. 86 *Electric Furnace Co. 52 Electro Metallurgical Co. Div. of Union Carbide Corp. 78 Erie Forge & Steel Corp. 17 Finkl, A. & Sons Co. 45 Foote Mineral Co. 330 *Formed Tubes Inc. 112 Foster, I. B., Company 153 Frank, M. K. 153	Tennessee Cool & Iron Div.,
Eastern Machinery Co., The. 54 Eastern Car & Construction Co. 86 *Electric Furnace Co. 52 Electro Metallurgical Co. Div. of Union Carbide Corp. 78 Erie Forge & Steel Corp. 17 Finkl, A. & Sons Co. 45 Foote Mineral Co. 330 *Formed Tubes Inc. 112 Foster, I. B., Company 153 Frank, M. K. 153	Tennessee Cool & Iron Div.,
Eastern Machinery Co., The. 54 Eastern Car & Construction Co. 86 *Electric Furnace Co. 52 Electro Metallurgical Co. Div. of Union Carbide Corp. 78 Erie Forge & Steel Corp. 17 Finkl, A. & Sons Co. 45 Foote Mineral Co. 330 *Formed Tubes Inc. 112 Foster, I. B., Company 153 Frank, M. K. 153	Tennessee Coal & Iron Div., United States Steel Corp. 27 Texas Company, The 76 *Textile Machine Works Timken Roller Bacring Co., The, Steel & Tube Division 54 Tractor & Equipment Co. 155
Eastern Machinery Co., The	Tennessee Coal & Iron Div., United States Steel Corp. 27 Texas Company, The 76 *Textile Machine Works 150 Timken Roller Bearing Co., The, Steel & Tube Division 54 Tractor & Equipment Co., 155 Union Carbide Corp. Electro
Eastern Machinery Co., The	Tennessee Coal & Iron Div., United States Steel Corp. 27 Texas Company, The 76 *Textile Machine Works 150 Timken Roller Bearing Co., The, Steel & Tube Division 54 Tractor & Equipment Co., 155 Union Carbide Corp., Electro Metallurgical Div. 78
Eastern Machinery Co., The. 54 Eastern Car & Construction Co. 86 *Electric Furnace Co. 132 Electric Furnace Co. 132 Electro Metallurgical Co. Div. of Union Carbide Corp. 78 Erie Forge & Steel Corp. 17 Finkl, A. & Sons Co. 45 Foote Mineral Co. 130 *Formed Tubes Inc. 112 Foster, L. B., Company. 153 Frank, M. K. 153 Gardner Machine Co. 25 *Gerrard Steel Strapping Dept. U. S. Steel Supply Division U. S. Steel Supply Division U. S. Steel Corp. 35 Goldsborough, Arnold 155 Goodman Electric Machinery Co. 153 Goss & DeLeeuw Machine Co. 37 *Greenlee Bros. & Co. 80 Greist Manufacturing Co., The. 156	Tennessee Coal & Iron Div., United States Steel Corp. 27 Texas Company, The 76 *Textile Machine Works 150 Timken Roller Bearing Co., The, Steel & Tube Division 54 Tractor & Equipment Co., 155 Union Carbide Corp., Electro Metallurgical Div. 78
Eastern Machinery Co., The. 54 Eastern Car & Construction Co. 86 *Electric Furnace Co. 86 *Electric Furnace Co. 97 Union Carbide Corp. 78 Erie Forge & Steel Corp. 17 Finkl, A. & Sons Co. 45 Foorle Mineral Co. 330 *Formed Tubes Inc. 112 Foster, L. B., Company. 153 Frank, M. K. 153 Gardner Machine Co. 25 *Gerrard Steel Strapping Dept. U. S. Steel Supply Division U. S. Steel Corp. 35 Goldsborough, Arnold 155 Goodman Electric Machinery Co. 153 Goss & DeLeeuw Machine Co. 137 *Greenlee Bros. & Co. 80 Greist Manufacturing Co., The. 156 Handy & Harman. 24	Tennessee Coal & Iron Div., United States Steel Corp. 27 Texas Company, The 76 *Textile Machine Works 150 Timken Roller Bearing Co., The, Steel & Tube Division 54 Tractor & Equipment Co., 155 Union Carbide Corp., Electro Metallurgical Div. 78
Eastern Machinery Co., The. 54 Eastern Car & Construction Co. 86 *Electric Furnace Co. 86 *Electric Furnace Co. 97 Union Carbide Corp. 78 Erie Forge & Steel Corp. 17 Finkl, A. & Sons Co. 45 Foorle Mineral Co. 330 *Formed Tubes Inc. 112 Foster, L. B., Company. 153 Frank, M. K. 153 Gardner Machine Co. 25 *Gerrard Steel Strapping Dept. U. S. Steel Supply Division U. S. Steel Corp. 35 Goldsborough, Arnold 155 Goodman Electric Machinery Co. 153 Goss & DeLeeuw Machine Co. 137 *Greenlee Bros. & Co. 80 Greist Manufacturing Co., The. 156 Handy & Harman. 24	Tennessee Coal & Iron Div. United States Steel Corp. 27 Texas Company, The 76 *Textile Machine Works 150 Timken Roller Bearing Co., The, Steel & Tube Division 54 Tractor & Equipment Co. 155 Union Carbide Corp., Electro Metallurgical Div. 78 United Air Lines 36 United States Steel Export Co. 27 *United States Steel Export Co. 27 *United States Steel Corp. 27 *United States Steel Supply Div. *Illiabed States Steel Supply Div. *Illiabed States Steel Corp. 27 *Illiabed States States Scele Corp. 27 *Illiabed States States States Scele Corp. 27 *Illiabed States States States States Scele Corp. 27 *Illiabed States Stat
Eastern Machinery Co., The. 54 Eastern Car & Construction Co. 86 *Electric Furnace Co. 86 *Electric Furnace Co. 97 Union Carbide Corp. 78 Erie Forge & Steel Corp. 17 Finkl, A. & Sons Co. 45 Foorle Mineral Co. 330 *Formed Tubes Inc. 112 Foster, L. B., Company. 153 Frank, M. K. 153 Gardner Machine Co. 25 *Gerrard Steel Strapping Dept. U. S. Steel Supply Division U. S. Steel Corp. 35 Goldsborough, Arnold 155 Goodman Electric Machinery Co. 153 Goss & DeLeeuw Machine Co. 137 *Greenlee Bros. & Co. 80 Greist Manufacturing Co., The. 156 Handy & Harman. 24	Tennessee Coal & Iron Div. United States Steel Corp. 27 Texas Company, The 76 *Textile Machine Works 150 Timken Roller Bearing Co., The, Steel & Tube Division 54 Tractor & Equipment Co. 155 Union Carbide Corp., Electro Metallurgical Div. 78 United Air Lines 36 United States Steel Export Co. 27 *United States Steel Export Co. 27 *United States Steel Corp. 27 *United States Steel Supply Div. *Illiabed States Steel Supply Div. *Illiabed States Steel Corp. 27 *Illiabed States States Scele Corp. 27 *Illiabed States States States Scele Corp. 27 *Illiabed States States States States Scele Corp. 27 *Illiabed States Stat
Eastern Machinery Co., The. 54 Eastern Car & Construction Co. 86 *Electric Furnace Co. 86 *Electric Furnace Co. 97 Union Carbide Corp. 78 Erie Forge & Steel Corp. 17 Finkl, A. & Sons Co. 45 Foorle Mineral Co. 330 *Formed Tubes Inc. 112 Foster, L. B., Company. 153 Frank, M. K. 153 Gardner Machine Co. 25 *Gerrard Steel Strapping Dept. U. S. Steel Supply Division U. S. Steel Corp. 35 Goldsborough, Arnold 155 Goodman Electric Machinery Co. 153 Goss & DeLeeuw Machine Co. 137 *Greenlee Bros. & Co. 80 Greist Manufacturing Co., The. 156 Handy & Harman. 24	Tennessee Coal & Iron Div., United States Steel Corp. 27 Texas Company, The 76 *Textile Machine Works 150 Timken Roller Bearing Co., The, Steel & Tube Division 54 Tractor & Equipment Co. 155 Union Carbide Corp., Electro Metalturgical Div. 78 United Air Lines 34 United Engineering & Foundry Co. 51 United States Steel Export Co. 27 *United States Steel Export Co. 27 *United States Steel Corp., 27 & 35 United States Steel Corp., 27 & 35 Universal Gyclops Steel Corp., 8 *Universal Gyclops Steel Corp., 8 *Universal Machinery & Equipment
Eastern Machinery Co., The. 54 Eastern Car & Construction Co. 86 *Electric Furnace Co. 12 Electro Metallurgical Co. Div. of Union Carbide Corp. 78 Electro Metallurgical Co. Div. of Union Carbide Corp. 78 Eric Forge & Steel Corp. 17 Finkl, A. & Sons Co. 45 Foote Mineral Co. 130 *Formed Tubes Inc. 112 Foster, L. B., Company 153 Frank, M. K. 153 Gardner Machine Co. 25 *Gerrard Steel Strapping Dept. U. S. Steel Supply Division U. S. Steel Supply Division U. S. Steel Strapping Dept. 153 Goldsborough, Arnold 155 Goodman Electric Machinery Co. 153 Goss & DeLeeuw Machine Co. 137 *Greenlee Bros. & Co. 80 Greist Manufacturing Co., The. 156 Handy & Harmon 24 Hardinge Mfg. Co. 156 Harris Foundry & Machine Co. 12 Hartford Machine Screw Company Huebel Mfg. Co. 16. 157 Hughes, Arnold, Co. 154 & 157 Hughes, Arnold, Co. 154 & 157 Hyman, Joseph, & Sons 154	Tennessee Coal & Iron Div., United States Steel Corp. 27 Texas Company, The 76 Textile Machine Works 159 Timken Roller Bearing Co., The, Steel & Tube Division 54 Tractor & Equipment Co. 155 Union Carbide Corp., Electro Metallurgical Div. 78 United Air Lines 34 United Engineering & Foundry Co. 51 United States Steel Export Co. 27 **United States Steel Export Co. 27 **United States Steel Corp., 27 & 35 United States Steel Corp., 27 & 35 U. S. Steel Wire Spring Co., The 158 **Universal Machinery & Equipment Co.
Eastern Machinery Co., The. 54 Eastern Car & Construction Co. 86 *Electric Furnace Co. 86 *Electric Furnace Co. 97 Union Carbide Corp. 78 Erie Forge & Steel Corp. 17 Finkl, A. & Sons Co. 45 Foorle Mineral Co. 330 *Formed Tubes Inc. 112 Foster, L. B., Company. 153 Frank, M. K. 153 Gardner Machine Co. 25 *Gerrard Steel Strapping Dept. U. S. Steel Corp. 36 Goldsborough, Arnold 155 Goodman Electric Machinery Co. 153 Gooss & DeLeeuw Machine Co. 137 *Greenlee Bros. & Co. 88 Gorst Machine Co. 137 *Greenlee Bros. & Co. 88 Gorst Machine Co. 137 *Greenlee Bros. & Co. 88 Hardis Foundry & Machine Co. 12 Hartford Machine Screw Company 16 Harris Foundry & Machine Co. 12 Hartford Machine Screw Company 16 Harris Foundry & Machine Co. 12 Hartford Machine Screw Company 16 Harris Foundry & Machine Co. 15 Huebel Mfg. Co., Inc. 154 Hughes, Arnold, Co. 154 Hupperial Ploe & Supply Co. 157 Hughes, Arnold, Co. 154 Harparial Ploe & Supply Co. 157	Tennessee Coal & Iron Div. United States Steel Corp. 27 Texas Company, The 76 Textile Machine Works 150 Timken Roller Bearing Co., The, Steel & Tube Division 54 Tractor & Equipment Co. 155 Union Carbide Corp., Electro Metallurgical Div. 78 United Air Lines 100 United Engineering & Foundry Co. 27 United States Steel Export Co. 27 United States Steel Export Co. 27 United States Steel Corp. 27 & 35 Universal Cyclops Steel Corp. 8 Universal Machinery & Equipment Co. 155 Vanodium-Alloys Steel Co. 65
Eastern Machinery Co., The. 54 Eastern Car & Construction Co. 86 *Electric Furnace Co. 86 *Electric Furnace Co. 97 Union Carbide Corp. 78 Fire Forge & Steel Corp. 17 Finkl, A. & Sons Co. 45 Foode Mineral Co. 130 *Formed Tubes Inc. 112 Foster, L. B., Company. 153 Frank, M. K. 153 Gardner Machine Co. 25 *Gerrard Steel Strapping Dept. U. S. Steel Supply Division U. S. Steel Corp. 36 Goldsborough, Arnold 155 Goodman Electric Machinery Co. 157 Goss & DeLeeuw Machinery Co. 137 *Gerenlee Bros. & Co. 88 Goldsborough, Arnold 155 Goodman Electric Machinery Co. 157 Grest Manufacturing Co., The. 156 Handy & Harmon 24 Hardinge Mfg. Co. 156 Hardiner Machine Co. 12 Lartford Machine Screw Company 5 Henry, A. T., & Company, Inc. 153 Huebel Mfg. Co., 164 Hughes, Arnold, Co. 154 Hughes, Arnold, Co. 154 Hughes, Arnold, Co. 157 Hyman, Joseph, & Sons 154 Hmperial Pipe & Supply Co. 157 Innocenti Corporation 123 Ion & Steel Products, Inc. 152	Tennessee Coal & Iron Div. United States Steel Corp. 27 Texas Company, The 76 Textile Machine Works 150 Timken Roller Bearing Co., The, Steel & Tube Division 54 Tractor & Equipment Co. 155 Union Carbide Corp., Electro Metallurgical Div. 78 United Air Lines 100 United Engineering & Foundry Co. 27 United States Steel Export Co. 27 United States Steel Export Co. 27 United States Steel Corp. 27 & 35 Universal Cyclops Steel Corp. 8 Universal Machinery & Equipment Co. 155 Vanodium-Alloys Steel Co. 65
Eastern Machinery Co., The. 54 Eastern Car & Construction Co. 86 *Electric Furnace Co. 86 *Electric Furnace Co. 97 Union Carbide Corp. 78 Erie Forge & Steel Corp. 17 Finkl, A. & Sons Co. 45 Foorle Mineral Co. 330 *Formed Tubes Inc. 112 Foster, L. B., Company 53 Frank, M. K. 153 Gardner Machine Co. 25 *Gerrard Steel Strapping Dept. U. S. Steel Supply Division U. S. Steel Supply Division U. S. Steel Strapping Dept. 18 Goldsborough, Arnold 155 Goodman Electric Machinery Co. 153 Gooss & DeLeeuw Machine Co. 137 *Greenlee Bros. & Co. 80 Greist Manufacturing Co., The. 156 Handy & Harman 24 Hardinge Mfg. Co. 154 Harris Foundry & Machine Co. 12 Hartford Machine Screw Company Fenry, A. T., & Company, 16 Fenry, A. T., & Company, 16. 153 Huebel Mfg. Co., Inc. 157 Hughes, Arnold, Co. 154 # 157 Hughes, Arnold, Co. 154	Tennessee Coal & Iron Div. United States Steel Corp. 27 Texas Company, The 76 Textile Machine Works 150 Timken Roller Bearing Co., The, Steel & Tube Division 54 Tractor & Equipment Co. 155 Union Carbide Corp., Electro Metallurgical Div. 78 United Air Lines 100 United Engineering & Foundry Co. 27 United States Steel Export Co. 27 United States Steel Export Co. 27 United States Steel Corp. 27 & 35 Universal Cyclops Steel Corp. 8 Universal Machinery & Equipment Co. 155 Vanodium-Alloys Steel Co. 65
Eastern Machinery Co., The. 54 Eastern Car & Construction Co. 86 *Electric Furnace Co. 86 *Electric Furnace Co. 96 Electro Metallurgical Co. Div. of Union Carbide Corp. 78 Erie Forge & Steel Corp. 17 Finkl, A. & Sons Co. 45 Foorle Mineral Co. 330 *Formed Tubes Inc. 112 Foster, L. B., Company 53 Frank, M. K. 153 Gardner Machine Co. 25 *Gerrard Steel Strapping Dept. U. S. Steel Supply Division U. S. Steel Supply Division U. S. Steel Strapping Dept. 36 Goldsborough, Arnold 155 Goodman Electric Machinery Co. 53 Goss & DeLeeuw Machine Co. 37 *Greenlee Bros. & Co. 80 Greist Manufacturing Co., The. 156 Handy & Harman 24 Hardinge Mfg. Co. 154 Harris Foundry & Machine Co. 12 Hartford Machine Screw Company Fenry, A. T., & Company, Inc. 153 Huebel Mfg. Co., Inc. 157 Hughes, Arnold, Co. 154 # Simperial Pipe & Supply Co. 157 Hughes, Arnold, Co. 154 # Imperial Pipe & Supply Co. 157 Hughes, Arnold, Co. 154 # Imperial Pipe & Supply Co. 157 Hughes, Arnold, Co. 154 # Imperial Pipe & Supply Co. 157 Hughes, Arnold, Co. 154 # Imperial Pipe & Supply Co. 157 Hughes, Bronson Machine Co. 18 # Johnson Bronze Co. 83 # Jones & Lomson Machine Co. 18	Tennessee Coal & Iron Div. United States Steel Corp. 27 Texas Company, The 76 Textile Machine Works 150 Timken Roller Bearing Co., The, Steel & Tube Division 54 Tractor & Equipment Co. 155 Union Carbide Corp., Electro Metallurgical Div. 78 United Air Lines 100 United Engineering & Foundry Co. 27 United States Steel Export Co. 27 United States Steel Export Co. 27 United States Steel Corp. 27 & 35 Universal Cyclops Steel Corp. 8 Universal Machinery & Equipment Co. 155 Vanodium-Alloys Steel Co. 65
Eastern Machinery Co., The. 54 Eastern Car & Construction Co. 86 *Electric Furnace Co. 86 *Electric Furnace Co. 96 Electro Metallurgical Co. Div. of Union Carbide Corp. 78 Erie Forge & Steel Corp. 17 Finkl, A. & Sons Co. 45 Foorle Mineral Co. 330 *Formed Tubes Inc. 112 Foster, L. B., Company 53 Frank, M. K. 153 Gardner Machine Co. 25 *Gerrard Steel Strapping Dept. U. S. Steel Supply Division U. S. Steel Supply Division U. S. Steel Strapping Dept. 36 Goldsborough, Arnold 155 Goodman Electric Machinery Co. 53 Goss & DeLeeuw Machine Co. 37 *Greenlee Bros. & Co. 80 Greist Manufacturing Co., The. 156 Handy & Harman 24 Hardinge Mfg. Co. 154 Harris Foundry & Machine Co. 12 Hartford Machine Screw Company Fenry, A. T., & Company, Inc. 153 Huebel Mfg. Co., Inc. 157 Hughes, Arnold, Co. 154 # Simperial Pipe & Supply Co. 157 Hughes, Arnold, Co. 154 # Imperial Pipe & Supply Co. 157 Hughes, Arnold, Co. 154 # Imperial Pipe & Supply Co. 157 Hughes, Arnold, Co. 154 # Imperial Pipe & Supply Co. 157 Hughes, Arnold, Co. 154 # Imperial Pipe & Supply Co. 157 Hughes, Bronson Machine Co. 18 # Johnson Bronze Co. 83 # Jones & Lomson Machine Co. 18	Tennessee Coal & Iron Div., United States Steel Corp. 27 Texas Company, The 76 *Textile Machine Works 150 Timken Roller Bearing Co., The, Steel & Tube Division 54 Tractor & Equipment Co. 155 Union Carbide Corp., Electro Metalturgical Div. 78 United Air Lines 34 United Engineering & Foundry Co. 51 United States Steel Export Co. 27 *United States Steel Export Co. 27 *United States Steel Corp., 27 & 35 United States Steel Corp., 27 & 3
Eastern Machinery Co., The. 54 Eastern Car & Construction Co. 86 *Electric Furnace Co. 86 *Electric Furnace Co. 96 Electro Metallurgical Co. Div. of Union Carbide Corp. 78 Erie Forge & Steel Corp. 17 Finkl, A. & Sons Co. 45 Foorle Mineral Co. 330 *Formed Tubes Inc. 112 Foster, L. B., Company 53 Frank, M. K. 153 Gardner Machine Co. 25 *Gerrard Steel Strapping Dept. U. S. Steel Supply Division U. S. Steel Supply Division U. S. Steel Strapping Dept. 36 Goldsborough, Arnold 155 Goodman Electric Machinery Co. 53 Goss & DeLeeuw Machine Co. 37 *Greenlee Bros. & Co. 80 Greist Manufacturing Co., The. 156 Handy & Harman 24 Hardinge Mfg. Co. 154 Harris Foundry & Machine Co. 12 Hartford Machine Screw Company Fenry, A. T., & Company, Inc. 153 Huebel Mfg. Co., Inc. 157 Hughes, Arnold, Co. 154 # Simperial Pipe & Supply Co. 157 Hughes, Arnold, Co. 154 # Imperial Pipe & Supply Co. 157 Hughes, Arnold, Co. 154 # Imperial Pipe & Supply Co. 157 Hughes, Arnold, Co. 154 # Imperial Pipe & Supply Co. 157 Hughes, Arnold, Co. 154 # Imperial Pipe & Supply Co. 157 Hughes, Bronson Machine Co. 18 # Johnson Bronze Co. 83 # Jones & Lomson Machine Co. 18	Tennessee Coal & Iron Div., United States Steel Corp. 27 Texas Company, The 76 *Textile Machine Works 150 Timken Roller Bearing Co., The, Steel & Tube Division 54 Tractor & Equipment Co. 155 Union Carbide Corp., Electro Metalturgical Div. 78 United Air Lines 34 United Engineering & Foundry Co. 51 United States Steel Export Co. 27 *United States Steel Export Co. 27 *United States Steel Corp., 27 & 35 United States Steel Corp., 27 & 3
Eastern Machinery Co., The. 54 Eastern Car & Construction Co. 86 *Electric Furnace Co. 86 *Electric Furnace Co. 97 Electro Metallurgical Co. Div. of Union Carbide Corp. 78 Erie Forge & Steel Corp. 17 Finkl, A. & Sons Co. 45 Foofe Mineral Co. 330 *Formed Tubes Inc. 112 Foster, L. B., Company. 153 Frank, M. K. 153 Gardner Machine Co. 25 *Gerrard Steel Strapping Dept. U. S. Steel Corp. 35 Goldsborough, Arnold 155 Goodman Electric Machinery Co. 153 Gooss & DeLeeuw Machine Co. 137 *Greenlee Bros. & Co. 88 Gors & DeLeeuw Machine Co. 137 *Greenlee Bros. & Co. 88 Gorest Manufacturing Co., The. 156 Handy & Harman 24 Hardinge Mfg. Co. 12 Hartford Machine Screw Company 16 Harris Foundry & Machine Co. 12 Hartford Machine Screw Company 16 Harris Foundry & Machine Co. 157 Hughes, Arnold, Co. 154 & 157 Hyman, Joseph, & Sons 154 Hymperial Pipe & Supply Co. 157 Innocenti Corporation 123 Jones & Lomson Machine Co. 18 *Johnson Bronze Co. 187 Kardong Brothers, Inc. 137 Keystone Forging Compony 157 Kirde Walter & Co. 166	Tennessee Coal & Iron Div., United States Steel Corp. 27 Texas Company, The 76 *Textile Machine Works 150 Timken Roller Bearing Co., The, Steel & Tube Division 54 Tractor & Equipment Co. 155 Union Carbide Corp., Electro Metalturgical Div. 78 United Air Lines 34 United Engineering & Foundry Co. 51 United States Steel Export Co. 27 *United States Steel Export Co. 27 *United States Steel Corp., 27 & 35 United States Steel Corp., 27 & 3
Eastern Machinery Co., The. 54 Eastern Car & Construction Co. 86 *Electric Furnace Co. 86 *Electric Furnace Co. 97 Union Carbide Corp. 78 Erie Forge & Steel Corp. 17 Finkl, A. & Sons Co. 45 Foofe Mineral Co. 330 *Formed Tubes Inc. 112 Foster, L. B., Company. 153 Frank, M. K. 153 Gardner Machine Co. 25 *Gerrard Steel Strapping Dept. U. S. Steel Corp. 35 Goldsborough, Arnold 185 Goodman Electric Machinery Co. 153 Gooss & DeLeeuw Machinery Co. 153 Goss & DeLeeuw Machinery Co. 157 Grest Manufacturing Co., The. 156 Handy & Harman 24 Hardinge Mfg. Co. 154 Hardis Foundry & Machine Co. 12 Harriford Machine Screw Company Henry, A. T., & Company, Inc. 154 Hughes, Arnold, Co. 154 *Enperial Pipe & Supply Co. 157 Innocenti Corporation 123 Iron & Steel Products, Inc. 152 Jessop Steel Company 116 *Ajohnson Bronze Co. 187 Kardong Brothers, Inc. 137 Keystone Forging Company 157 Kardong Brothers, Inc. 137 Keystone Forging Company 157 Kutzhow Foundry, Inc. 157 *Kurthown Foundry & Machine Co. 18 Kutzhow Foundry & Machine Co. 18 Kutzhow Foundry & 157 Kutzhow Foundry & 157 Kutzhow Foundry & 157 Kutzhow Foundry & Machine Co. 187 Kutzhow Foundry & Machine Co. 157 *Kutzhow Foundry & Machine Co. 157	Tennessee Coal & Iron Div., United States Steel Corp. 27 Texas Company, The 76 *Textile Machine Works 150 Timken Roller Bearing Co., The, Steel & Tube Division 54 Tractor & Equipment Co. 155 Union Carbide Corp., Electro Metalturgical Div. 78 United Air Lines 34 United Engineering & Foundry Co. 51 United States Steel Export Co. 27 *United States Steel Export Co. 27 *United States Steel Corp., 27 & 35 United States Steel Corp., 27 & 3
Eastern Machinery Co., The. 54 Eastern Car & Construction Co. 86 *Electric Furnace Co. 86 *Electric Furnace Co. 97 Union Carbide Corp. 78 Fire Forge & Steel Corp. 17 Finkl, A. & Sons Co. 46 Foote Mineral Co. 30 *Foote Mineral Co. 30 *Formed Tubes Inc. 112 Foster, L. B., Company. 153 *Frank, M. K. 153 Gardner Machine Co. 25 *Gerrard Steel Strapping Dept. U. S. Steel Supply Division U. S. Steel Supply Division U. S. Steel Corp. 35 Goldsborough, Arnold 155 Goodman Electric Machinery Co. 153 Goos & DeLeeuw Machine Co. 137 *Greenlee Bros. & Co. 80 Greist Manufacturing Co., The. 156 Handy & Harman 24 Hardinge Mfg. Co. 154 Hardring Mfg. Co. 154 Hardring Mfg. Co. 155 Hughes, Arnold, Co. 154 Hyman, Joseph, & Sons 154 Imperial Pipe & Supply Co. 157 Innocenti Corporation 123 Iron & Steel Products, Inc. 152 Jessop Steel Company 155 *Katradong Brothers, Inc. 137 *Katradong Brothers, Inc. 137 *Kuttown Foundry & Machine Co. 18 *Kuttown Foundry & Machine Co. 19 *Katradong Brothers, Inc. 167 *Kuttown Foundry & Machine Co. 17 *Kuttown Foundry & Machine Co. 18 *Kuttown Foundry & Machine Co. 18 *Kuttown Foundry & Machine Co. 18 *Kuttown Foundry & Machine Co. 19 *Kuttown Foundry & Machine Co. 19 *Kuttown Foundry & Machine Co. 19 *Kuttown Foundry & Machine Co. 34	Tennessee Coal & Iron Div. United States Steel Corp. 27 Texas Company, The 76 *Textile Machine Works 150 Timken Roller Bearing Co., The, Steel & Tube Division 54 Tractor & Equipment Co. 155 Union Carbide Corp., Electro Metallurgical Div. 78 United Air Lines United Air Lines United Air Lines United States Steel Export Co. 27 *United States Steel Export Co. 27 *United States Steel Corp., 27 *United States Steel States Steel Corp., 27 *United States Steel States Steel States Steel Corp., 27 *United States Steel States Stat
Eastern Machinery Co., The. 54 Eastern Car & Construction Co. 86 *Electric Furnace Co. 86 *Electric Furnace Co. 97 Union Carbide Corp. 78 Fire Forge & Steel Corp. 17 Finkl, A. & Sons Co. 46 Foote Mineral Co. 30 *Foote Mineral Co. 30 *Formed Tubes Inc. 112 Foster, L. B., Company. 153 *Frank, M. K. 153 Gardner Machine Co. 25 *Gerrard Steel Strapping Dept. U. S. Steel Supply Division U. S. Steel Supply Division U. S. Steel Corp. 35 Goldsborough, Arnold 155 Goodman Electric Machinery Co. 153 Goos & DeLeeuw Machine Co. 137 *Greenlee Bros. & Co. 80 Greist Manufacturing Co., The. 156 Handy & Harman 24 Hardinge Mfg. Co. 154 Hardring Mfg. Co. 154 Hardring Mfg. Co. 155 Hughes, Arnold, Co. 154 Hyman, Joseph, & Sons 154 Imperial Pipe & Supply Co. 157 Innocenti Corporation 123 Iron & Steel Products, Inc. 152 Jessop Steel Company 155 *Katradong Brothers, Inc. 137 *Katradong Brothers, Inc. 137 *Kuttown Foundry & Machine Co. 18 *Kuttown Foundry & Machine Co. 19 *Katradong Brothers, Inc. 167 *Kuttown Foundry & Machine Co. 17 *Kuttown Foundry & Machine Co. 18 *Kuttown Foundry & Machine Co. 18 *Kuttown Foundry & Machine Co. 18 *Kuttown Foundry & Machine Co. 19 *Kuttown Foundry & Machine Co. 19 *Kuttown Foundry & Machine Co. 19 *Kuttown Foundry & Machine Co. 34	Tennessee Coal & Iron Div. United States Steel Corp. 27 Texas Company, The 76 *Textile Machine Works 150 Timken Roller Bearing Co., The, Steel & Tube Division 54 Tractor & Equipment Co. 155 Union Carbide Corp., Electro Metalturgical Div. 78 United Air Lines 36 United Air Lines 45 United Engineering & Foundry Co. 27 *United States Steel Export Co. 27 *United States Steel Export Co. 27 *United States Steel Export Co. 27 *United States Steel Corp. 27 & 35 United States Steel Corp. 27 & 35 *United States Steel Corp. 27 & 35 *United States Steel Corp. 27 & 35 *United States Steel Corp. 8 *Universal Cyclops Steel Corp. 8 *Universal Machinery & Equipment Co. 155 *Wandalum-Alloys Steel Co. 155 *Wandalum-Alloys Steel Co. 155 *Wast Steel Co. 155 *Western Automatic Machiner Screw Company, The 11 *Whisler Equipment Co. 155 *Wickwire Spencer Steel Div., The *Colorado Fuel & Iron Corp. 150 *Wickwire Spencer Steel Div., The *Colorado Fuel & Iron Corp. 150 *Wickwire Spencer Steel Div., The *Colorado Fuel & Iron Corp. 150 *Wickwire Spencer Steel Div., The *Colorado Fuel & Iron Corp. 150 *Wickwire Spencer Steel Div., The *Colorado Fuel & Iron Corp. 150 *Wickwire Spencer Steel Div., The *Colorado Fuel & Iron Corp. 150 *Wickwire Spencer Steel Div., The *Colorado Fuel & Iron Corp. 150 *Wickwire Spencer Steel Div., The *Colorado Fuel & Iron Corp. 150 *Wickwire Spencer Steel Div., The *Colorado Fuel & Iron Corp. 150 *Wickwire Spencer Steel Div., The *Colorado Fuel & Iron Corp. 150 *Wickwire Spencer Steel Div., The *Colorado Fuel & Iron Corp. 150 *Wickwire Spencer Steel Div., The *Colorado Fuel & Iron Corp. 150 *Wickwire Spencer Steel Div., The *Colorado Fuel & Iron Corp. 150 *Wickwire Spencer Steel Div., The *Colorado Fuel & Iron Corp. 150 *Wickwire Spencer Steel Div., The *Colorado Fuel & Iron Corp. 150 *Wickwire Spencer Steel Div., The *Colorado Fuel & Iron Corp. 150 *Wickwire Spencer Steel Div., T
Eastern Machinery Co., The. 54 Eastern Car & Construction Co. 86 *Electric Furnace Co. 86 *Electric Furnace Co. 97 Union Carbide Corp. 78 Fire Forge & Steel Corp. 17 Finkl, A. & Sons Co. 46 Foote Mineral Co. 30 *Foote Mineral Co. 30 *Formed Tubes Inc. 112 Foster, L. B., Company. 153 *Frank, M. K. 153 Gardner Machine Co. 25 *Gerrard Steel Strapping Dept. U. S. Steel Supply Division U. S. Steel Supply Division U. S. Steel Corp. 35 Goldsborough, Arnold 155 Goodman Electric Machinery Co. 153 Goos & DeLeeuw Machine Co. 137 *Greenlee Bros. & Co. 80 Greist Manufacturing Co., The. 156 Handy & Harman 24 Hardinge Mfg. Co. 154 Hardring Mfg. Co. 154 Hardring Mfg. Co. 155 Hughes, Arnold, Co. 154 Hyman, Joseph, & Sons 154 Imperial Pipe & Supply Co. 157 Innocenti Corporation 123 Iron & Steel Products, Inc. 152 Jessop Steel Company 155 *Katradong Brothers, Inc. 137 *Katradong Brothers, Inc. 137 *Kuttown Foundry & Machine Co. 18 *Kuttown Foundry & Machine Co. 19 *Katradong Brothers, Inc. 167 *Kuttown Foundry & Machine Co. 17 *Kuttown Foundry & Machine Co. 18 *Kuttown Foundry & Machine Co. 18 *Kuttown Foundry & Machine Co. 18 *Kuttown Foundry & Machine Co. 19 *Kuttown Foundry & Machine Co. 19 *Kuttown Foundry & Machine Co. 19 *Kuttown Foundry & Machine Co. 34	Tennessee Coal & Iron Div. United States Steel Corp. 27 Texas Company, The 76 *Textile Machine Works 150 Timken Roller Baoring Co., The, Steel & Tube Division 54 Tractor & Equipment Co. 155 Union Carbide Corp., Electro Metallurgical Div. 78 United Air Lines United Air Lines United Air Lines Corp., Electro Metallurgical Div. 78 United Air Lines Corp., 27 United States Steel Export Co. 27 *United States Steel Export Co. 27 *United States Steel Corp., 28 *Universal Machinery & Equipment Co., 155 *Weiss Steel Co., 165 *Weiss Steel Corp., 155 *Weiss Steel Corp., 155 *Weiss Steel Corp., 156 *Weiss Steel Corp., 156 *Weiss Steel Corp., 157 *Western Automatic Machine Scraw *Company, The *Wheland Co., The 11 *Whister Equipment Co. 155 *Weiss Steel Corp., 156 *Weiss Steel Corp., 157 *Weiss Steel Corp., 158 *Weiss Steel Corp., 159 *Weiss Steel Corp., 159 *Weiss Steel Corp., 159 *Weiss Steel Corp., 150 *Weis
Eastern Machinery Co., The. 54 Eastern Car & Construction Co. 86 *Electric Furnace Co. 86 *Electric Furnace Co. 91 Electro Metallurgical Co. Div. of Union Carbide Corp. 78 Frie Forge & Steel Corp. 17 Finkl, A., & Sons Co. 45 Foode Mineral Co. 130 *Formed Tubes Inc. 112 Foster, L. B., Company. 153 Frank, M. K. 153 Gardner Machine Co. 25 *Gerrard Steel Strapping Dept. U. S. Steel Supply Division U. S. Steel Supply Division U. S. Steel Supply Division U. S. Steel Corp. 36 Goldsborough, Arnold 155 Goodman Electric Machinery Co. 153 Goss & DeLeauw Machinery Co. 157 Greenlee Bros. & Co. 17 *Greenlee Bros. & Co. 17 *Greenlee Bros. & Co. 17 *Lardford Machine Screw Company 5 *Lardford Machine Co. 15 *Losses Steel Company 115 *Losses Steel Com	Tennessee Coal & Iron Div. United States Steel Corp. 27 Texas Company, The 76 *Textile Machine Works 150 Timken Roller Bearing Co., The, Steel & Tube Division 54 Tractor & Equipment Co. 155 Union Carbide Corp., Electro Metallurgical Div. 78 United Air Lines United Air Lines United Air Lines United States Steel Export Co. 27 *United States Steel Export Co. 27 *United States Steel Corp., 27 *United States Steel States Steel Corp., 27 *United States Steel States Steel Corp., 27 *United States Steel States Steel States Steel States Steel States
Eastern Machinery Co., The. 54 Eastern Car & Construction Co. 86 *Electric Furnace Co. 86 *Electric Furnace Co. 97 Union Carbide Corp. 70 Erie Forge & Steel Corp. 17 Finkl, A. & Sons Co. 45 Foorle Mineral Co. 330 *Formed Tubes Inc. 112 Foster, L. B., Company 53 Frank, M. K. 53 Gardner Machine Co. 25 *Gerrard Steel Strapping Dept. U. S. Steel Corp. 36 Goldsborough, Arnold 155 Goodman Electric Machinery Co. 153 Gooss & DeLeeuw Machine Co. 137 *Greenlee Bros. & Co. 88 Gors & DeLeeuw Machine Co. 137 *Greenlee Bros. & Co. 88 Gors & DeLeeuw Machine Co. 137 *Greenlee Bros. & Co. 88 Hardis Foundry & Machine Co. 12 Hardford Machine Screw Company 5 Henry, A. T. & Company, 154 Harris Foundry & Machine Co. 12 Hardford Machine Screw Company 19 Henry, A. T. & Company, 16 Harperial Pipe & Supply Co. 157 Innocenti Corporation 123 Iron & Steel Products, Inc. 153 Johns & Lomson Machine Co. 18 *Kaisar Steel Corp. 157 *Kardong Brothers, Inc. 137 Keystone Forging Company, 115 *Kaisar Steel Corp. 157 *Kuttown Foundry & Machine Co. 18 Kaisar Steel Corp. 157 *Kuttown Foundry & Machine Co. 18 Kaisar Steel Corp. 157 *Kuttown Foundry & Machine Co. 18 *Kaithown Foundry & Machine Co. 18 *Lamson & Sessions Co., The. 19 Lang Machinery Co., Inc. 154 Less-Bradner Co., The. 154 Less-Bradner Co., The. 154 Less-Bradner Co., The. 155	Tennessee Coal & Iron Div. United States Steel Corp. 27 Texas Company, The 76 *Textile Machine Works 150 Timken Roller Bearing Co., The, Steel & Tube Division 54 Tractor & Equipment Co. 155 Union Carbide Corp., Electro Metalturgical Div. 78 United Air Lines 36 United Air Lines 45 United Engineering & Foundry Co. 27 *United States Steel Export Co. 27 *United States Steel Export Co. 27 *United States Steel Export Co. 27 *United States Steel Corp. 27 & 35 United States Steel Corp. 27 & 35 *United States Steel Corp. 27 & 35 *United States Steel Corp. 27 & 35 *United States Steel Corp. 8 *Universal Cyclops Steel Corp. 8 *Universal Machinery & Equipment Co. 155 *Wandalum-Alloys Steel Co. 155 *Wandalum-Alloys Steel Co. 155 *Wast Steel Co. 155 *Western Automatic Machiner Screw Company, The 11 *Whisler Equipment Co. 155 *Wickwire Spencer Steel Div., The *Colorado Fuel & Iron Corp. 150 *Wickwire Spencer Steel Div., The *Colorado Fuel & Iron Corp. 150 *Wickwire Spencer Steel Div., The *Colorado Fuel & Iron Corp. 150 *Wickwire Spencer Steel Div., The *Colorado Fuel & Iron Corp. 150 *Wickwire Spencer Steel Div., The *Colorado Fuel & Iron Corp. 150 *Wickwire Spencer Steel Div., The *Colorado Fuel & Iron Corp. 150 *Wickwire Spencer Steel Div., The *Colorado Fuel & Iron Corp. 150 *Wickwire Spencer Steel Div., The *Colorado Fuel & Iron Corp. 150 *Wickwire Spencer Steel Div., The *Colorado Fuel & Iron Corp. 150 *Wickwire Spencer Steel Div., The *Colorado Fuel & Iron Corp. 150 *Wickwire Spencer Steel Div., The *Colorado Fuel & Iron Corp. 150 *Wickwire Spencer Steel Div., The *Colorado Fuel & Iron Corp. 150 *Wickwire Spencer Steel Div., The *Colorado Fuel & Iron Corp. 150 *Wickwire Spencer Steel Div., The *Colorado Fuel & Iron Corp. 150 *Wickwire Spencer Steel Div., The *Colorado Fuel & Iron Corp. 150 *Wickwire Spencer Steel Div., The *Colorado Fuel & Iron Corp. 150 *Wickwire Spencer Steel Div., T



A New Kind of D-c. Motor With DYNAMIC RESPONSE

Here is a motor built to make maximum use of d-c. flexibility. The Super 'T' puts Dynamic Response into starts, stops, and speed changes. Dynamic Response gives you a 50% increase in torque and a 50% decrease in reaction time.

This top performance is due to advanced, balanced design. Lighter small diameter armatures cut mechanical inertia 50%. Superior Class B insulation, gives extended life even at temperatures as great as 130°C.

Top grade insulation plus engineered ventilation lets the Super 'T' take tremendous overloads. In fact, the Super 'T' can develop double normal horsepower during starts, stops, and speed changes.

The Super 'T' is a compact power package, designed inside and out for tough industrial service. From appearance to performance, the Reliance Super 'T' with Dynamic Response is today's most modern industrial motor.

C-1577



RELIANCE INGINEERING CO.

DEPT. 211A, CLEVELAND 17, OHIO CANADIAN DIVISION: TORONTO, ONTARIO Sales Offices and Distributors in Principal Cities



The big boy sheds some weight...

... About three tons of it just came off in that lathe. For this "big boy" is a forty-ton plate mill roll—one of the largest made.

While no one here at Mack-Hemp was so blasé that he ignored this roll as it went through the shop, no one was overly impressed, either. Regardless of size, every roll that's poured here at Mack-Hemp receives the full measure of painstaking care—which is why you get more tonnage from the rolls with the striped red wabblers.



MACKINTOSH-HEMPHILL Division of E. W. BLISS Company
901 Bingham Street, Pittsburgh 3, Pa.